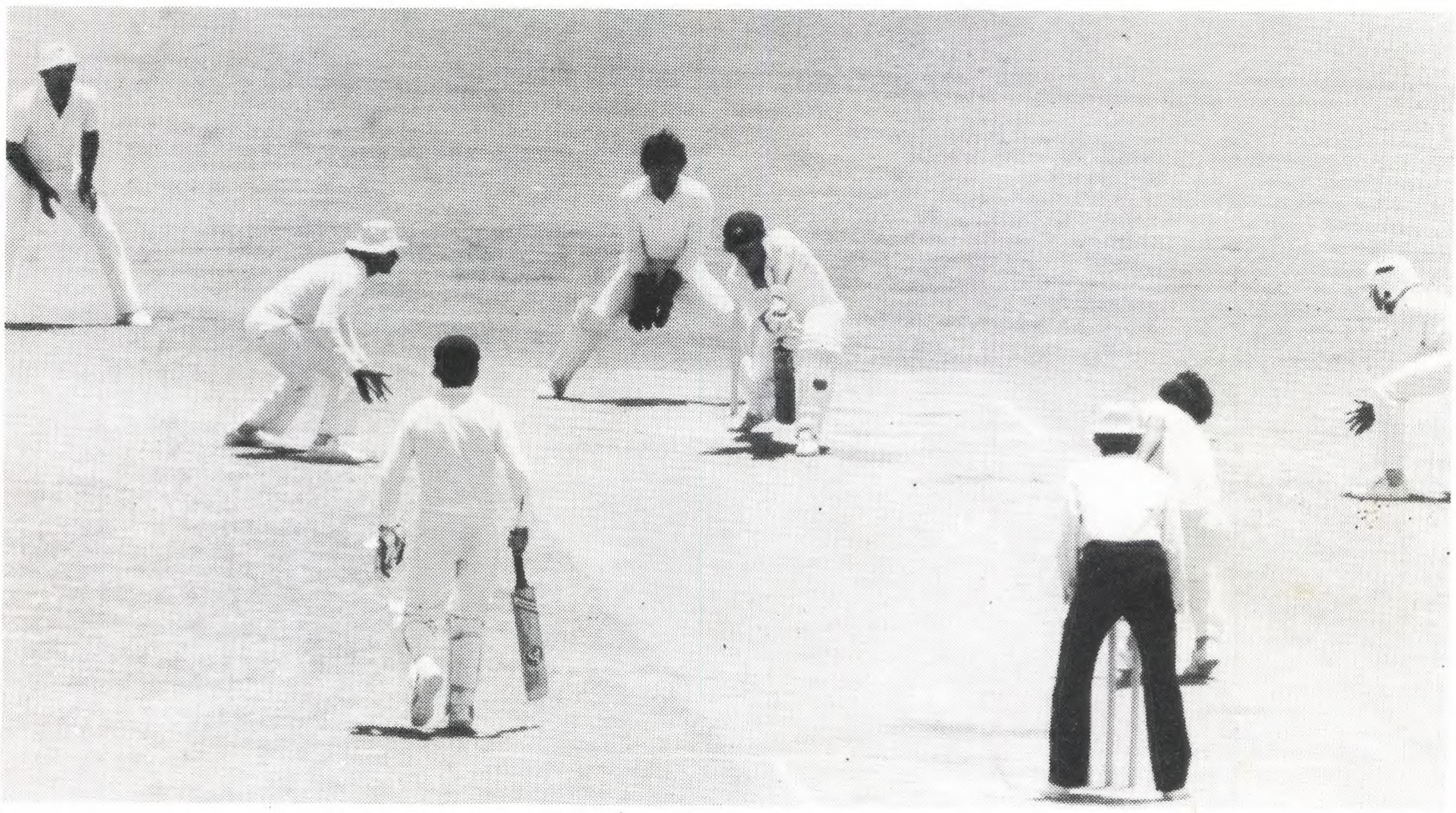
# MICRO-80

P.O. BOX 213, GOODWOOD, S.A. 5034. AUSTRALIA. TELEPHONE (08) 211 7244. PRICE: AUS. $3.50, N.Z. $5.00, U.K. £1.50
Registered by Australia Post – Publication No. SBQ2207

Vol. 4, Issue 6, January 1984



## CRICKET FOR COCO

Also in this issue:

**ARTICLES:**

The Adelaide Micro-User Group Bulletin Board
Recreation-80

**REVIEWS:**

Zorlof Word Processor
The Accel 4 Compiler
The TRS-80 Model 4

**SOFTWARE:**

Alien Chase (Peach)
Nightmare Park — Level II
Film Production Costing — Level II
Amateur Radio Log Book — Level II
Automatic Directory — Disk

**• TRS-80 • SYSTEM 80 • VIDEO GENIE • PMC-80 • HITACHI PEACH • TRS-80 COLOUR COMPUTER**

# MOLYMERX

*Australia's broadest range of software for TRS-80's and SYSTEM 80's*

MOLYMERX has the Australian distribution rights for literally hundreds of top grade programs from American, Canadian and British publishers. From games to utilities, from DOS's to Databases, if it's top quality then MOLYMERX almost certainly has it.

Now, MOLYMERX is being distributed in Australia by MICRO-80. To help you chose from the incredibly wide range of programs available, you may purchase a MOLYMERX catalogue. For only $5.00 you receive over 80 pages of what is virtually an encyclopedia of '80 software plus regular updates for 12 months. The useful information contained in this catalogue is worth many times its cost.

There are now generous BULK BUYING DISCOUNTS of 10% off list price for single orders in excess of $500 or 15% for single orders in excess of $1,000. So get together with your friends or User Group members to place a combined order and save yourselves real $$$.

# EXPANSION INTERFACES FOR SYSTEM 80 and TRS-80 COMPUTERS

MICRO-80's new family of expansion interfaces for the System 80 and TRS-80 offer unprecendented features and reliability including:

Up to 32K STATIC RAM : to ensure high noise immunity and reliability

Centronics Printer Port: The Systems 80 Expansion Interface has a double-decoded port to respond to both port FD and memory address 37E8H, thus overcoming one of the major incompatabilities with the TRS-80.

RS232 Communications Port: for communicating via modem or direct link to other computers

Single Density Disk Controller: for complete compatability with all Disk Operating Systems

Supports double-sided Disk Drives up to 80 tracks: with a suitable disk operating system such as DOSPLUS, NEWDOS 80 or LDOS, the interface will support single or double sided drives of 35-80 track capacity.

Economical double density: an economical, high quality double-density upgrade will be released shortly to enable you to increase the capacity of your disk drives by 80%.

Real time clock interrupt: provides software clock facility used by most DOS's.

| SYSTEM-80 EXPANSION IN/FACE | | TRS-80 EXPANSION INTERFACE | |
|---|---|---|---|
| WITH ØK RAM | $450.00 | WITH ØK RAM | $450.00 |
| ADDITIONAL 16K RAM | 99.00 | ADDITIONAL 16K RAM | 99.00 |
| ADDITIONAL 32K RAM | 198.00 | ADDITIONAL 32K RAM | 198.00 |

Available May 1984: Interfaces will be supplied on a first-come-first-served basis. To avoid disappointment you should write in NOW to be included on the no-obligation waiting list.

# SYSTEM 80 PRINTER INTERFACE $99 + $3.00 p&p

For those who wish to add a printer to their SYSTEM 80. MICRO-80's new printer interface provides the ideal solution. Double-decoded to both port FD and address 37E8H, this interface overcomes one of the major incompatabilities between the SYSTEM 80 and the TRS-80. Price includes a Centronics printer cable. Operates with Centronics compatible printers including GP-80 and GP-100.

Similar interface is also available for the TRS-80 $99.00 + $3.00 p&p

# CONTENTS


**REGULARS**
EDITORIAL 2
PEEKING (UK) 2
INPUT/OUTPUT 6
RECREATION-80 4

**DEPARTMENTS**
KALEIDOSCOPE (COLOUR COMP) 2
GROUP ONE (MODEL 1/SYSTEM 80) 3
FORM THREE (MODEL 3) 3
PEACH BOWL (HITACHI PEACH) 3

**ARTICLES**
THE ADELAIDE MICRO USER GROUP BULLETIN BOARD 5
NOTES FROM THE SOFTWARE EDITOR 7

**REVIEWS**
ZORLOF — THE MAGNIFICENT WORD PROCESSOR 8
THE ACCEL 4 COMPILER 9
REVIEW OF THE TRS-80 MODEL 4 10

**SOFTWARE**
ALIEN CHASE (PEACH) 12 & 15
CRICKET (COLOUR COMPUTER) 12 & 15
NIGHTMARE PARK (L2/4K) 12 & 17
FILM PRODUCTION COSTING (L2/16K) 12 & 19
AUTOMATIC DIRECTORY (48K/DISK) 13 & 20
AMATEUR RADIO LOG BOOK (L2/16K) 14 & 17

NEXT MONTH'S ISSUE 23
CASSETTE DISK EDITION INDEX 24
ORDER FORM 23


## ABOUT MICRO-80

EDITOR: IAN VAGG

MICRO-80 is an international magazine devoted to the Tandy TRS-80 Model 1, Model III and Colour microcomputers, the Dick Smith System 80/Video Genie and the Hitachi Peach. It is available at the following prices:

| | 12 Months | Single Copy |
|---|---|---|
| MAGAZINE ONLY | $ 36.00 | $ 3.50 |
| CASSETTE SUBSCRIPTION | $ 96.00 | $ 6.00 |
| DISK SUBSCRIPTION | $125.00 | $10.00 (disk) |

MICRO-80 is available in the United Kingdom from:
U.K. SUBSCRIPTION DEPT. 24 Woodhill Park, Pembury, Turnbridge Wells, KENT TN2 4NW

| | | |
|---|---|---|
| MAGAZINE ONLY | £16.00 | £1.50 |
| CASSETTE SUBSCRIPTION | £43.00 | £N/A |
| DISK SUBSCRIPTION | £75.00 | £N/A |

MICRO-80 is available in New Zealand from:
MICRO PROCESSOR SERVICES, 940A Columbo Street, CHRISTCHURCH 1 NZ. Ph. 62894

| | | |
|---|---|---|
| MAGAZINE ONLY | NZ$ 59.00 | NZ$ 5.60 |
| CASSETTE SUBSCRIPTION | NZ$130.00 | NZ$ 7.50 |
| DISK SUBSCRIPTION | NZ$175.00 | NZ$15.00 |

MICRO-80 is despatched from Australia by airmail to other countries at the following rates:

| (12 MONTH SUB) | Magazine | Cass Sub | Disk Sub |
|---|---|---|---|
| PAPUA NEW GUINEA | Aus$53.50 | Aus$115.50 | Aus$148.50 |
| HONG KONG/SINGAPORE | Aus$58.00 | Aus$122.00 | Aus$157.50 |
| INDIA/JAPAN | Aus$64.00 | Aus$129.00 | Aus$165.00 |
| USA/MIDDLE EAST/CANADA | Aus$73.00 | Aus$140.00 | Aus$177.00 |

Special bulk purchase rates are also available to computer shops etc. Please use the form in this issue to order your copy or subscription.

The purpose of MICRO-80 is to publish software and other information to help you get the most from your TRS-80, System 80/Video Genie or Peach and its peripherals. MICRO-80 is in no way connected with any of the Tandy, Dick Smith or Hitachi organisations.

**WE WILL PAY YOU TO PUBLISH YOUR PROGRAMS:** Most of the information we publish is provided by our readers, to whom we pay royalties. An application form containing full details of how you can use your microcomputer to earn some extra income is included in every issue.

**CONTENT:** Each month we publish at least one applications program in BASIC for each of the microcomputers we support. We also publish Utility programs in BASIC and Machine Language. We publish articles on hardware modifications, constructional articles for useful peripherals, articles on programming techniques both in Assembly Language and BASIC, new product reviews for both hardware and software and we printer letters to the Editor.

**COPYRIGHT:** All the material published in this magazine is under copyright. This means that you must not copy it, except for your own use. This applies to photocopying the magazine itself or making copies of programs on tape or disk.

**LIABILITY:** The programs and other articles in MICRO-80 are published in good faith and we do our utmost to ensure that they function as described. However, no liability can be accepted for the failure of any program or other article to function satisfactorily or for any consequential damages arising from their use for any purpose whatsoever.

MICRO-80 is Registered by Australia Post — Publication No. SBQ2207

**AUSTRALIAN OFFICE AND EDITOR:** MICRO-80, P.O. Box 213, Goodwood, S.A. 5034. Tel. (08) 211 7244

**U.K. SUBSCRIPTION DEPARTMENT:** 24 Woodhill Park, Pembury, Turnbridge Wells, Kent TN2 4NW

**TYPESETTING & MAKE-UP:** Formgraphic, 117 Wright Street, Adelaide, S.A. 5000. Tel. (08) 211 7866

**PRINTED BY:** Shovel & Bull Printers, 379 South Road, Mile End, S.A. 5031

**PUBLISHED IN AUSTRALIA BY:** MICRO-80, 433 Morphett Street, Adelaide, S.A. 5000

# EDITORIAL

Amongst the computers which MICRO-80 supports, the HITACHI PEACH is something of the odd-man-out. We introduced it at a time when the Peach offered features generally far in excess of other machines then available and looked set to sell in large quantities so that there would be a great number of enthusiastic users in Australia. Unfortunately, the anticipated sales did not materialise and only a small proportion of our readers own Peaches. It has become uneconomic to continue to support this machine for such a small following. Accordingly, this will be the last issue of MICRO-80 to support the Hitachi Peach. We apologize to those readers who are inconvenienced by this change but feel that you should continue to obtain value from MICRO-80 particularly from articles and programs written for the TRS-80 Colour Computer.

The space which is relinquished by the Hitachi Peach, will in future issues, be given over to support for the VZ-200 sold in Australia by the Dick Smith Organisation and known in the UK as the Laser. This is an interesting, low-priced Z80 based machine already having a large number of enthusiastic and faithful adherents. Indeed, it is repeated requests from a number of owners which has lead us to the decision to include the VZ-200 in our magazine.

It is well known that car manufacturers hold back from including a number of features they have already designed, in the first release of a new model so they will have something to use to entice buyers in later releases of the same model. Very few computer manufacturers have used this ploy, probably because the high rate of change of technology suggests that next year's model will be entirely different anyway or more cynically because few computer companies are sufficiently far-sighted to consider anything but this year's model which they are frantically trying to get to market.

Tandy is a lone giant swimming against this tide. The recent announcement of the 64K Colour Computer 2 brings a revamped model with a factory fitted 64K of RAM, a real keyboard and the ability to run the industry standard OS9 disk operating system which Tandy will sell. This is not the first time Tandy has released evolutionary products rather than revolutionary. The Model 3 is really little more than a revamped, rehoused Model 1 whilst the Model 4 is clearly just an improvement on the Model 3. That this policy works is plain to see. One software house estimates that Tandy has sold 300,000 Model 3's. That figure seems high to us but is, strangely enough, the first figure we have seen published in recent times estimating Model 3 sales. Whatever the truth of the matter, Tandy's rather staid, somewhat overpriced computers quietly carry on while many technological shooting stars burn brightly for a few months then quickly fade away. Perhaps Tandy long ago realised that computers are bought and operated by human beings most of whom prefer evolution to revolutions and certainly, once they have invested their money in a system, will not be too pleased to see that system rendered obsolete by its maker in a few months time.

Last month we announced support for database programs (PROFILE and ENBASE) and VISICALC. Currently, we are preparing articles and applications for these programs. We would welcome Readers contributions to illustrate useful applications they have implemented. We also promised more attention to word processors. That kicks off with the review of ZORLOFF in this issue. MOLYMERX has recently been appointed the Australian distributor for LAZYWRITER which will now make a welcome return to these shores having been virtually priced out of the market due to high import duties, for the past 12 months or so. The latest version of LAZYWRITER has many additional features, making it amongst the most powerful of the word processors available for small home computers. We will certainly be featuring a review of this program in a future issue.

# PEEKING (UK)

**by Tony Edwards**

All is gloom in the UK world of the computer manufacturer. The days of the ever falling prices of home computers have resulted in the fall of the manufacturers. The very good, but very cheap Dragon Computer has fallen and with it the shares of Mettoy, who produce it, from 50p to only 3p. Iotech has gone into receivership followed quickly by Grundy Business Machines. The latter are the manufacturers of the Newbrain Machine and the falling demand for this computer led to a cash squeeze which eventually overwhelmed the company.

The Newbrain was originally designed by Clive Sinclair, and his current computers appear to be the only ones which have been able to withstand the pressure. The ever popular ZX81, never an expensive machine is now selling at only £40. This however has not lead to any problems for its manufacturer as they have just reported a jump in pretax profits to over £14 million. Which cannot be bad in this poor economic climate.

Some months ago I reported that I had heard of the production of a simple add-on device which would make the now aged '80 machines as good as the latest colour machines. Now I have seen a finished modification in action and can report that it is all true and the '80 is converted into a machine better than most of the latest models.

The device simply plugs into the back of both the System 80/Genie and the Tandy and works without any further ado. It provides colour, high resolution, and a paged screen. All this and it does not use any of the host computers memory, as it has its own onboard memory chips. What I identify as the best point of this conversion is that it appears to be transparant to the computer when it is not in use. This means that all the old programs will still run so the fitting of this mod. does not mean that users must start to rebuild their software library with new programs BASIC programs can be very easily converted to run in colour, only a few lines need be added, and m/l programs can also be converted with some more effort. I hope to publish a full report on this interesting development in the next few months after I have had the chance of using it.

# DEPARTMENTS

**KALEIDOSCOPE**

**MERGING TWO BASIC PROGRAMS**

To merge two BASIC programs means to combine them together to form a single program. This is fairly easy to do if you have a MERGE statement in your BASIC — you just refer to the manual. If you don't have the MERGE command, then you have one of two choices: you either buy a utility package that will do it for you or you type in the programs. You can't CLOAD one and then the other because CLOAD performs a NEW before loading. However, there is a relatively simple way to append one BASIC program to the end of another.

First, you should make sure that the two programs in question have sequential line numbers, e.g. program 1 has line numbers in the range 1 — 100 while program 2 has line numbers in the range 101 — 200. In the July '83 issue we published the addresses where the pointers to the start and to the end of any BASIC program are stored in reserved RAM. The joining of two (or more) BASIC programs is done by setting the pointer to the start of the BASIC program equal to the pointer to the end of the program — this effectively hides the program already in memory from the BASIC interpreter and you can CLOAD the next program and it will be stored immediately after the "hidden" program. You then restore the pointer to the start of the program to its original value and the job is done.

To try it for yourself, just follow these steps:

1. CLOAD program. 1
2. Type in the following: PRINT PEEK (25), PEEK (26) (ENTER)
   These two numbers printed form the pointer to the start of the BASIC program just loaded. Make a note of them for later.
3. Now type: PRINT PEEK (27), PEEK (28) (ENTER)
   These form the pointer to the end of the program in memory. You must set the start of BASIC pointer to two less than the value of this pointer — this can be done by:

X = 256* PEEK (27) + PEEK (28) – 2 (ENTER)
POKE 25, INT (X/256): POKE26,X-256*PEEK)25 (ENTER)
If you now try to LIST the program, you'll find it's no longer there, as far as BASIC is concerned!

4. CLOAD program 2.
5. POKE the original values back into addresses 25 & 26 (you did make a note of them in step 2?) and you're done.

**GROUP ONE**
**FORM THREE**

Some little while ago, an argument raged in the Readers Letters column of the US BYTE magazine as to whether or not there was an inherent "bug" in the MICROSOFT BASIC interpreter. As is so often the case, the contributions became progressively more abstract, neverthless, all parties agreed that, whether it should be called a bug or not, the practice of exiting from a FOR . . . NEXT loop prematurely is likely to cause problems leading to mysterious error messages and seemingly disconnected program malfunctions. The temptation to do so is considerable. If you are testing for a condition and it occurs when you are only part way through the FOR . . . NEXT loop you must do something about it. Assuming you have programmed yourself into this corner, the least you can do is set the loop counter to its ultimate value before exiting as the totally trivial example below shows.

```
10 FOR I = 1 to 20
20 IF I = 10 THEN I = 20:
GOTO 100
30 REM PUT YOUR CODE HERE
100 NEXT
110 REMAINDER OF PROGRAM
```

In this example, the loop will never be completed since the condition I = 10 will always occur (hence its triviality) but it does serve to illustrate the point. When I equals 10, it is time to leave the loop. If we simply jump from line 20 to line 110 we leave the **FOR . . . NEXT** loop incomplete thus setting the scene for later disaster. Instead, line 20 sets the loop counter to the value it would have attained had nature been allowed to run its course. Control is then passed to the **NEXT** statement which increments the loop counter by 1, senses that the loop is now complete and allows program flow to proceed. Honour is satisfied, that mystical but all powerful being the "STACK" is appeased and our program can continue on its trivial path secure in the knowledge that any further bugs will have been introduced by its own author rather than MICROSOFT programmers.

Incidentally, those who consider this to be a bug rather than an immutable natural phenomenon, point to other BASIC interpreters which do not have such a restriction. The letter from Angela Whiting, reproduced below shows that even MICRO-80's authors are not above living dangerously in the FOR . . . NEXT jungle.

Dear Sir,

You may have heard the scream. I finally got around to typing in the Dr. Who Adventure only to find that it wouldn't work. I found the error in line 840 but still no success.

I had typed it in, in my usual way making minor modifications so I could combine the initialliser with the program and still get it to fit in 16k. I left out the REM, fiddled with the CLEAR and left out the variables after the NEXTs.

It was in the last point that the problem arose. Normally in Level 2 BASIC it is not necessary to put the variable name after a NEXT. It simply takes up extra memory and slows up program execution. BASIC just assumes that the NEXT belongs with the latest FOR. James Smith had however JUMPED OUT OF A FOR NEXT LOOP. Hard to believe it. It is such a nice program. Of course, in committing such a sin against programming, the STACK gives problem; OM ERRORs etc. may occur. James was lucky that his program runs. It is always possible to program differently. I forgive you, James but don't let it happen again. Line 880 is the offender.

To fit the initialliser information into the main program, it is necessary to type strings of spaces into the program for SP, SD, S0 and S1 and using the VARPTR instruction to tell you their memory location, POKE in the DATA one byte at a time. This only need be done once and is a useful technique with graphics too.

Yours faithfully,
ANGELA WHITING

Michael Eldridge has brought to our attention a useful but undocumented feature of the editing function in the MICROSOFT BASIC interpreter. Like Michael, I too have a poor memory for line numbers (I even wish the Editor could remember the last line I edited before letting the program RUN!)

From: M. Eldridge, Seaford, South Australia.

While looking through the "LEVEL II REFERENCE MANUAL" I came across an idea that might save people time. In chapter 2 page 5 I saw under the heading "LIST line number — line number". It says you can use the statement "LIST." to list the line just entered or edited. Also it says you can use the statement "LIST - 50".

I thought that if you can use "." and "-" in separate statements you might be able to use them together. This works and has saved me some time. Using the statement "list.-" the computer will LIST from the line just entered or edited onwards. This saves typing in LIST 50-.. It can also be used up to the line just entered in the same way. This I have found useful as a lot of the time I forget the line I have just entered after I have run the program. I thought that some of your readers might benefit from this.

Also the same can be done to "DELETE". Where you can "DELETE" up to a number by using "DELETE-." etc.

# PEACHBOWL

As stated in the Editorial, this is our last Peachbowl. However, the subject may, in many respects, be a new dawning for Peach owners. The MICROSOFT BASIC disk operating system in the standard Peach whilst easy to learn, is relatively slow and inflexible. Nor is there a large base of software to draw from. The 6809 microprocessor used in the Peach comes from a well established family of micro-processors which is used in many different computers. There are two disk operating systems generally used with these computers: OS9 and Flex. A considerable amount of packaged software has been developed for these operating systems, particularly in the USA, ranging from programmers utilities such as assemblers and debuggers, to languages including BASIC, FORTRAN, PASCAL etc. and applications such as database managers, wordprocessors etc. Until recently these operating systems and their compatible software, have been denied the Peach user. Now both are available. The subject of this Peach Bowl is the Flex operating system available from Whitethorn software, 3 Lemon Rd, Nth. Balwyn, Vic. 3104, Phone (03) 857 7128.

The Flex disk operating system is the most widely used DOS for the 68xx family of microcomputers. It has been in use for over six years and there is a wide range of software available for it, particularly from America.

Whitethorn Software has adapted Flex to operate on the Peach, and is now able to help you instal Flex on your own system. If you need software for business or scientific applications, rather than for games, you should seriously consider using Flex. It is a simple, straight-forward system, and very user friendly. For instance, there are nearly 100 error messages, which are printed out on the screen to help you locate a problem.

The adaption has been carried out in Australia by people who use and understand Flex, and who can provide local support in overcoming any problems. Source code is provided for all utility programs written by Whitethorn Software. Commercial users can also purchase the full source code listing of the adaption to help with future maintenance.

Flex requires a Peach with either one or two 16K, bank switched RAM cards, a double density controller, and one to four disk drives. No hardware changes are needed, and if you have two RAM cards you can use either Flex or Peach-DOS by putting in the appropriate disk, and entering NEWON.

The cost of Flex varies depending on the combination of programs required. You can expect it to range from $60.00 for a simple hobbiest application to $200 including utilities, the text editor and assembler together with an excellent set of manuals. Whitethorn Software can give you a precise quota-

tion and answer any questions you may have about hardware requirements etc. Whilst on the subject of Whitethorn Software, they also have a very useful extended monitor for the Peach.

This is a disk based program intended for those people writing and debugging assembly language programs, and those who like poking around the inside of ROMs. It extends the Dump command to print out 256 locations at a time in both HEX and ASCII, to simplify the location of strings. It prints the register contents with meaningful values, and lets you manually insert and remove breakpoints in programs in RAM. In addition, it lets you move the contents of a block of memory to another location, and to fill a block with a specified value. It is available for 32K single density, and 40K single and double density Peach-DOS for $25.00 per copy, including packaging and postage.

# RECREATION-80

**by Eduardas M. Grigonis**

Welcome to the first of what I hope will become a regular feature in Micro-80. The main thrust of this column will be directed at games for the various models of Tandy computers and their respective lookalikes.

I should probably begin by explaining a bit about myself and how I have come to contribute to Micro-80 in this manner. I first purchased a 16K, tape-based, Level II Model I about three year ago. Since then I have expanded my system to include two Tandy disk drives, a Tandy expansion interface with extra 32K of RAM, RS232C and Tandy double density modification and an Epson MX-80F/T III printer. Whilst I have TRSDOS 2.3 and TRSDOS 2.7DD, I do most of my disk manipulation using the finest DOS available for the TRS-80 (For those who HAVE to ask, I am, of course, referring to LDOS).

I have been a member of the Adelaide Micro User Group for about the last two years and have recently been responsible for co-ordinating the activities of the games afficionadoes within the Group. One task I have undertaken is to maintain a High Scores List for Group members. I have also given a short talk on 'The Adventure System' available from The Alternate Source. A review of 'The Adventure System' which I originally wrote for the User Group newsletter appeared in the November/December issue of Micro-80. I have also been a regular contributor to the newsletter for about the last 18 months. Through my contacts in the Group I gained the opportunity to review some games programs. These reviews were published in two 1983 issues of another Australian computer magazine. One of the reviews also appeared in abbreviated form in an Australian national weekly magazine.

The amount of computer equipment I possess may seem like overkill when you consider that the greater part of my time at the keyboard is spent in playing games. I see nothing wrong with this as I find that the extra capacity has come in useful on more than one occassion.

I would be the first to admit that I am no great shakes when it comes to programming this little beast now before me. I think, however, that I can rightly claim to be somewhat of a connoisseur when it comes to playing many of the games now availalbe for the TRS-80. (Although that doesn't necessarily mean that I have to be good at them all!)

I am confident that I have had enough experience in playing many of the available games to be able to pick the faults and qualities in any new ones that come to light. It is with that main idea in mind that I have begun this venture.

A large part of the effort behind this column will be devoted to reviewing games. The main thrust of reviews will be directed at relatively new games. Obviously a lot of people already have the older games and most people will be more interested in finding out about new additions to the market of which they may be unaware. I will also review games which may have been available for a while but which are still available. This is in order to cater to the interests of those who may be new to this hobby. You may also find that, ocassionally, I will review a game which may not have been available for some time. The main reason for this is to let people know what they may have missed out on but I will also want to recognise efforts which may now be considered classics of their time.

I should stress that the fact that I am, in effect, Micro-80's official games reviewer in no way precludes anyone else from continuing to write their own reviews of games for the TRS-80. If you have discovered a great game and want the world to know about it (I assume the circulation is that good) then send in a review. If the review is good enough then it will probably be published.

Another major purpose of this column will be to attempt to answer any queries you may have about particular games (so get those cards and letters in, folks!). I will try and include answers to any questions in future columns although whether or not I can provide an answer depends on whether I have, or can get, access to the game.

Think twice before you ask me how to get past the latest stumbling block in your newest Adventure. If I, or the people I may have to refer to, think that the answer is obvious to anyone with an ounce of patience then don't expect the answer you're looking for. Also, don't go fishing, i.e. to use one of my favourite expressions, if you haven't found the aardvaark and the mongoose, I won't tell you what to do with the plunger (Then again????). If the query relates to what those with experience at the Adventure found to be a frustrating obstacle then you can expect some real assistance, although it may be cryptic.

Whenever possible I will be including a column within a column, tentatively titled 'Just For The Joy Of It!'. The purpose of this mini-column will be to provide joy-stick conversions for programs previously published in Micro-80 and, where possible, for commercial offerings. The standard used will be the Alpha Products joystick (also compatible with the Big Five Trisstick, not to mention the Stickeroo available from Micro-80). If you have already converted a program for joysticks then send in the details. If there is enough demand I will also attempt to include conversions for non-standard joysticks.

As I don't have access to a Color Computer I am unsure as to how much effort I will be able to devote to the CoCo. I will do the best I can.

The final part of this first column will discuss what I expect to find in a good 'arcade' game.

Clearly, the major factor in any game has to be playability. Those of us with Model I's, etc. will be well aware of the limitations of black and white, low resolution graphics. It is sometimes considered surprising, therefore, that many owners of this particular computer have no interest in flashy colours and 2,000,000X2,000,000 very high resolution graphics. The fact of the matter is that many programmers have demonstrated time and time again that the last thing anyone needs is flashy gimmicks. I have yet to find anyone play, for instance, 'Olympic Decathlon' and have any time to notice the blatant primitiveness of the system for the simple reason that they are so engrossed in playing the game and marvelling at what the programmer has achieved. Compare this with the high-res Apple version and its awkward joystick manipulation on some events (they aren't always a good idea!). 'Galaxy Invasion' is yet another classic which wouldn't gain a thing from high-res colour graphics simply because its so eminently playable just as it is. Other than the above, it is difficult to comment philosophically on playability however this will be a major factor in any future reviews.

Aside from playability, the other major consideration in any of my reviews of 'arcade' games will relate to what many see as enhancements but I see as necessities. Things I will look for will be a pause feature, standard joystick compatibility, attract mode, adequate High Score Table, ability to clear the High Score Table, store an overall High Score Table, store varied current High Score Tables (i.e. to cater for playing with different groups of friends) and ability to get a printout of High Scores, not to mention great sound effects. Most people will be aware that few of these features are standard.

I probably need to explain my attitude to High Score Tables. One of the disk programs I have is Melbourne House Software's 'Wild West'. This game comes with provision to store the overall Top Ten Scores to disk. There is no provision to clear the High Scores and the diskette is protected from copying. Although the game itself rates very highly in playability I found that once I had racked up some respectable

scores I couldn't persuade anyone else to play the game for the simple reason that they had no chance of getting within cooee of the Top Ten Scores in the forseeable future. (And my scores weren't even all that spectacular!) Fortunately I have since found out how to delete the scores using 'Trakcess' so the game has come out of the 'Too Hard Bin'. I have also seen many games which only have provision to show the latest High Score and, if you're really lucky, the Last Score. Any 'arcade' game should show at least the Top Ten Scores in the current session. As to long term retention of High Scores any disk 'arcade' game should store the overall Top Ten Scores. I also consider that provision should be given to store separate groups of High Scores to enable competition within various groups. This may seem unreasonable to some until you consider that most 'arcade' games occupy less than 16K and I have yet to see one use as much as 32K. Yet they are provided on protected disks with acres of free space. I for one would be a lot happier about buying disk games if I knew that I was able to use the diskette to maximum capacity. It is also true that most people are happy to compete with friends but get frustrated with not being able to emulate the feats of strangers. Hence the need for variable High Score Tables. For those instances, and they do happen, when you want to start from scratch, provision to delete any or all High Scores is also essential. A feature I have seen in only one game so far ('Martian Patrol') is the ability to print out a Certificate of Merit showing High Score achievements. This factor adds considerably to the enjoyability of the game and should be standard.

One thing I am finding increasingly frustrating is the ego trips of some games authors who insist on including themselves and their mates in the High Scores tables whenever the game starts. OK! Show us what sort of scores are attainable! Give us something to aim for! But let us delete the High Scores so we can start from scratch and aren't immediately beset with frustration at being unable to attain what, to a beginner at the game, will be an impossible target and being constantly reminded of it at the end of every game. Give us an idea at the start but let us get there without constant reminders of how long it's taking us.

The other factor I will look at in 'arcade' games is how often bonus ships, etc, are awarded and the ease or difficulty in which they may be obtained. Demerits will accrue for excess ease or difficulty.

Don't get the idea from the above that I will only be reviewing 'arcade' games. If its a game and I can get it, I will attempt to review it, good or bad. See you next column (and don't forget those cards and letters!)!

## COLOUR COMPUTER PROGRAMS NEEDED

We need programs for the COLOUR COMPUTER to publish in MICRO-80 magazine. If you have written programs, why not send them in for appraisal. We pay a publication fee so it can be profitable and you will achieve fame amongst your fellow computerists as a published author! There is an application form in each issue. So, don't delay, send in that program today and you may see it in print in a future issue of MICRO-80.

# THE ADELAIDE MICRO USER GROUP BULLETIN BOARD

**by Richard Newcombe**

For a variety of reasons, including a lack of suitable modems in particular, the appearance of user group bulletin boards in Australia has considerably lagged behind events in the United States. We have been trying to add this service for our members for some time. Apart from keeping up with the Jones', we have felt that it would be a very useful adjunct to the clubs normal meetings and newsletter as it provides a forum for chatter and information between meetings and allows people to communicate with each other at a rather more leisurely rate and in a fashion which would not otherwise occur. As our bulletin board has been functioning since about November 1983, it is interesting to note how it is being used and it is quite obvious that people are having a lot more to do with each other than would be possible through our meetings (even though we have one main meeting and four special interest group meetings per month).

As I am also the newsletter editor, I did not want to be burdened with having to be completely responsible for management of the bulletin board itself and in view of the lack of bulletin board software we embarked, foolishly or not, on a project of writing our own. Our main intent was that we have a number of sections (or special interest groups) running simultaneously with the bulletin board such that a number of special interest group operators (SIGOPs) could maintain the files within their own section of the bulletin board. Presently the bulletin board is divided into a number of sections including the main user bulletin board, announcements, system information, and special interest groups. The special interest groups include a Model 1, 3, 4 SIG (special interest group), CoCo SIG, LNW and a CP/M user section. It is very easy to implement extra special interest groups as long as we have the numbers to make these sections active and also have a person who is willing to look after the files within that SIG.

Our bulletin board is a little unique in that it has multiple system operators (2 SYSOPs and 4 SIGOPs) with one other person apart from myself having executive access to all sections and user records. The SIGOPs, as we call them, can edit and run their own special interest group from their own home as they deem fit. We hope to have included, by the time this is published, a magazine/editorial section that can have items added to it by selected persons (such that it will not become cluttered with irrelevant material) and hopefully will contain, club news, discount deals, events, topical news etc. We have found that with the implementation of the special interest groups that the main bulletin board section was relieved of some of the congestion but it still remains the main forum for general chatter and feedback between members.

Other features which should be functioning by the time of publication of this article will include Post which is a facility for directing messages to specific individuals who will be notified of such entries when they log on to the bulletin board. Because of the restriction on disk storage space, we intend that small programs will be avialable much more readily than large public domain material as the latter is far more appropriately distributed on disks or tapes between individuals and the bulletin board cannot readily act as a library for huge amounts of software. We will add an extra feature whereby the SIGOP of each special interest group can make available two or three selections of somewhat larger programs each month for their members but we will continue to have restrictions on this even though we currently have online something like 1 megabyte of storage.

We may run the bulletin board in conjunction with some other clubs (presently being negotiated) to assist in financing the overall cost of the operation as the total outlay on hardware at the present time makes it impractical for such a service to be continuously available with the assets of any one club or borrowed equipment. We also believe in the principle of 'user pays' but non members may get very limited access to the system at a later date. We have limited membership to the bulletin board to club members (or those of clubs affiliated with its running) for a number of reasons. In particular some programs and explanation thereof may be extracts from club newsletters and other bulletin board information would also be contained therein. Also it is intended to complement club functions and activities and not be an independent service.

At the present time we are willing to give people ONE MONTH'S FREE ACCESS for evaluation and, for those who are interested, you need only provide your name, address and telephone number to myself at 25 Queen Street, Unley 5061. I will post in return a slip including details of your username and password. The initial sign of fee is $30 for city members, country (>50km from G.P.O.) $15, and interstate members $10 (annual fees will be determined later by ongoing costs).

# INPUT/OUTPUT

In this column we answer Readers' letters. We also encourage other Readers who have experience of the problems reported to write in with their solutions. We are happy to receive requests for help in solving Adventure games etc. but do not believe in giving direct answers, that would just spoil the game for the Reader concerned and many others. We will give hints and cryptic clues (if we have managed to solve the game ourselves!!)

## DISK TOUCHTYPE PROBLEMS

FROM: G.N. Adam —
Drummoyne, N.S.W.

Some time ago I read an article in MICRO-80 entitled 'Transferring Touchtype to Disk'' by G.F. Hilder. I was published in your Vol. 3 No. 3 under the date February 1982.

I believe that this kind of misinformation has done more to hinder the development of MICRO-80 than any other single factor.

There must have been dozens of amateur disk users who have followed religiously every step of the instructions only to be disappointed and disgusted with the result.

When I tried it the response to the starting lesson was of course ''INPUT AFTER END IN 80''. Would this have something to do with the fact that Instruction 7 ''Load and run the following program'' results in an endless loop and opens a file without closing it?

In Instruction 8(d) you leave in a colon after line 30. A minor point but one which confuses many beginners. And in line 80 you load ''TTYPE2/BAS:1'' although the original was saved on Drive 0.

In Instruction 8(h) you leave in such remarks as ''rewind it please'' — not easy to do with a disk — and there is throughout the program a plethora of ''RUNS'' and ''ENTERS'' that are quite unnecessary in disk use and can only confuse the near novice to the state where he gives the whole thing up in disgust, as I did myself.

However, when I later realised the need for this modification — the cassette version is hopelessly slow — I tried to make the program work, though my expertise is poor in this area. I modified the program in Instruction 7 to put ''25 FOR X1 to 180'' and ''70 NEXT X'' and ''75 CLOSE: END''. The number 180 was a guess and was too low but at least I didn't get ''INPUT AFTER END''. However, the results on running the program were not satisfactory.

Why not publish the extremely useful TOUCHTYPE in a properly modified disk version? You would be doing many of us a great service.

(To take your last question first, Touchtype is the property of its author not of MICRO-80. Whilst the author has produced disk versions for other computers he has not done so for the TRS-80 computers and we are therefore unable to publish a properly modified disk version as you request. The article in question was submitted by a reader and it was made fairly clear in our introduction that we had not been involved in the process at all. In fact, we did not test the modification made as we would have done had the article been published under MICRO-80's own auspices. It is unfortunate that there were some errors in the published material and your frustration is understandable. We must however take exception to comments near the beginning of your letter which imply that MICRO-80 suffers badly from such errors and ''misinformation''. In fact, the reverse is true. We have an extremely low level of bugs and errors in the programs we publish and for which we accept full responsibility. We normally insist that programs be supplied on magnetic media. In this case, we only had a listing to work from which had to be transcribed for printing. It is quite likely that, despite careful proof reading, errors were introduced during this process.

In a situation such as this we can either spend a considerable amount of time installing and testing modifications suggested by our reader (and it does take a considerable amount of time to thoroughly test Touchtype), we can publish it as is or we can leave it out altogether. In fact, the percentage of our readers who have bought Touchtype is quite small and it would not justify the time involved to test the modifications. We also had no reason to doubt our correspondent's word that he had successfully made the program work from disk. We therefore felt it better to publish it as an unsupported article so that those of our readers who were interested could gain some benefit from it. The letter below is from another reader who encountered similar problems to yourself and would appear to have overcome them. Once again we must point out that we have not tested the modifications so give no undertaking that they do in fact work as stated. — Ed.)

## DISC TOUCHTYPE PROBLEMS SOLVED?

FROM: Graham Malcolm —
Thomastown, Vic.

I am writing in reference to the article printed in MICRO-80 Vol. 3 No. 3 — Touchtype Conversion to Disk. The conversion as printed didn't work for me. I have enclosed modifications I made to make the program run on disk.

1. The small program that loads ''TTYPE4/TXT'' from tape to disk causes an error ''INPUT AT END'' IN 80 because the file hasn't been closed. Correction to line 70: IF A=0 THEN CLOSE ELSE 30.

2. Correction to ''TTYPE2/BAS'':
The end of line 80 should read LOAD ''TTYPE2/BAS'' and not LOAD ''TTYPE2/BAS:1''.

3. TTYPE2/BAS: The CLEAR in line 100 has the effect of closing the file that was opened in line 75, and line 220 must be changed to INPUT#1 from INPUT#-1.

Below are the additional changes to ''TTYPE2/BAS'' to make it work:
Line 70 Change CLEAR to CLEAR 666
Delete Line 90
Line 100 Remove CLEAR 666
Line 220 Change INPUT#-1 to INPUT#.
(Thank you — Ed.)

## BACK ISSUES AND TYPOS

FROM: C.J. McCulloch — Waimate, N.Z.

As a MICRO-80 magazine subscriber I was wondering if you could send me the listing of the program ''MOVIE'' that was published in your September 1981 issue. Since I didn't start subscribing to your magazine until the beginning of 1982 I did not get that issue. In the August 1982 issue I found that the game 'Jump the Rapids' needed the 'MOVIE' program as well.

Also I am having trouble with the 'Dr. Who Adventure'. I read your October 1982 issue and tried clearing 50 but I am now getting an OM error on Line 650. Could you please tell me what is wrong?

One more thing. In you June 1982 issue you had a m.l. program called 'Micro Grand Prix'. I typed it in and ran it and I got the starting of the track. But when I pushed the starting key the car couldn't be controlled by the keys and always smashed into the wall ahead of it. We went through the program at least 3 times and could not find a mistake. Could you please help with this also? If you could do these things it would be very much appreciated. I think your magazine is excellent and has some very good content.

(Most back issues, including September '81 are still available for $2.50 per copy or $17 for 12. Alternatively, photocopies of the desired material can be made at the rate of 20c per page.

In the Dr. Who Adventure, the OM error would result if you attempted to DIMension one or more of the arrays too large. Check line 650 carefully against the magazine listing. Similarly, for Micro Grand Prix, check lines 800-1070 carefully for any typographical errors — in particular, lines 800 and 930. — Ed.)

## ADVENTURE BLUES

FROM: Adrian Keating — North Essendon, Vic.

I would like to say how much I appreciate your magazine. Yours is the only one I know of to keep all advertisements separate from the pages containing useful information (it's too bad I can't say the same about '80-MICRO'). And your free software library has saved my neck more than once.

Now for the real reason I wrote this letter. Being a beginner at computers I often have a lot of trouble with things that seem second nature to other computer users. For example, if it would be at all possible, could you or one of your readers out there please . . . please give me a list of all the commands available for the ''Dr. Who Adventure''. This being my first such adven-

ture, I almost gave up before I discovered there were more words than just "north, south, east, west, up, down". This information might not help anyone but me but I could sure use the help and experience.

Thanks again from the bottom of my System 80.

(Most adventure programs accept two word sentences but few of them list their vocabulary. Making yourself understood is just part of the 'fun' of the game. You should remember your role as an adventurer is to explore your surroundings, to collect treasure and to defend yourself from attack. What commands you use are up to your own imagination. If one thing doesn't work, try something else. — Ed.)

### MISSING PERSON

FROM: Jim Campbell, Vic.

I would like to get in touch with Mr Graeme Moad, who is unfortunately not receiving mail at the address published with his program in the January 1982 issue.

Would he please contact me on (03) 898 8732, out of business hours, or by mail at

92 Carrington Rd,
BOX HILL
Vic. 3128

### LEVEL 1 PROGRAMS

FROM: Mr. H. Murphy — Hamersley W.A.

Please would it be possible to have ONE program for level 1 in each issue as advised by you in earlier issues?

(We can only publish programs that we receive from our readers and, at the moment, very few Level 1 programs are being submitted. It appears that most Tandy users must have upgraded to Level II. We would of course, be happy to consider Level 1 programs for publication, should anyone out there wish to submit them — Ed).

FROM: Jamie Howden — Maryborough, Vic.

Our family are considering moving to Marong, which is a small town outside Bendigo (Vic.) However, the house has no electricity and may not have any for some time. We are gradually solving these problems, e.g. gas fridge, gas lights etc. However, the biggest problem is HOW DO I RUN MY DICK SMITH SYSTEM 80 WITHOUT ELECTRICITY???

As it is 99% certain that we will take this place, I would appreciate very much if your Technical Department could solve this problem for me. Will it run on a battery, and if so, what kind?

Dad is considering solar power as an alternative to electricity. Would a computer run on solar power?

I hope you can help. It took me four years as a paper boy to save enough for my computer, and I don't want to lose it now because of lack of electricity.

If you can't help me, I would appreciate the name of someone who could advise me on this matter.

(Two possible solutions are to use a generator or a DC-DC Converter which are expensive to buy. ETI and EA magazines have already published constructional articles for a DC-DC converter which may be a cheaper solution. For other options I suggest you contact the relevant government department in your State. — Ed.)

### EDTASM + WOES

FROM: Tom Parker — East Malvern, Vic.

Could someone with experience of the MICROSOFT 'Editor-Assembler Plus' please help me?

I have a 16K System Blue Label computer which I have had for nearly nine months. I recently typed out a large assembly program (about 400 lines long — I had to 'Quash Z-bug' to type it out). It was late at night by now so I decided to save the source code and assemble it in the morning. I saved the source code and switched the computer off. The next morning I loaded EDTASM+ and used the 'QZ' command to gain the extra memory needed. I began loading the source code but about ¾ of the way into the program the tape stopped and the message 'BUFFER FULL' appeared on the screen. Could you please tell me why I cannot load the source code, what I am doing wrong and how I might resolve the problem without more memory.

Also I wonder if you could tell me where I can obtain an explanation of Z-bug and how to use it . . .

(To the best of my knowledge what you have done should work — I can only suggest that the copy of EDTASM+ you have or had in memory is corrupt, perhaps due to a hardware fault or bad tape load. An explanation of Z-bug and how to use it is contained in the EDTASM+ manual. — Ed.)

### REACTION TIME PROGRAM WANTED

FROM: Arthur Shores — Dept. Clin. Psychology, Westmead Centre, Westmead, N.S.W. 2145.

Thank you for your excellent magazine. I have just received my first 2 copies.

My work is in the area of cognitive rehabilitation following brain damage and would be interested to know if there are any programs available in Australia for a TRS-80 Model 3 L2 related to this area. I am especially interested in obtaining a simple dual reaction time program. Can you help me?

(I'm afraid we can't be of immediate help with either of your problems. Your local Tandy store can supply you with the "TRS-80 Application Software Sourcebook" which may be of help. Perhaps some of our readers have similar interests so we have included your full address so they may contact you directly. — Ed.)

### SYSTEM 80 CASSETTE PROBLEMS

FROM: Ronald Cunningham — Boronia, Vic.

I hava a System 80 computer with cassette (no disk drive), and I find it extremely difficult to load "SYSTEM" tapes into the computer. It is appreciated that volume sensitivity makes the loading of computer tapes a problem — and with the System 80 this can be overcome (if the program is in BASIC) by loading through the second (external) cassette recorder (rather than through the inbuilt recorder). With "SYSTEM" tapes I do not know of a command similar to "CLOAD#-2" which is effective for BASIC tapes. If you have any answers to the problem they would be received gratefully.

(The best solution to this problem is to fit a switch to interchange the roles of cassette recorders #1 and #2 as suggested in the System 80 Technical Manual and load through an external deck. Any software solution would probably be defeated by those programs that use their own special preloader such as SARGON II. - Ed.)

### SYSTEM PROGRAMS ON OS/80

FROM: Mr D. Sutton — Bexley, N.S.W.

I am writing to your magazine for some advice which I hope you can find time to answer. My problem is this:

I have a System 80 48K, Drive 0 and Percom's OS/80 Microdos. Unfortunately this DOS version only loads/saves BASIC programs. To the best of your knowledge is there any patch available to adapt OS/80 to enable loading/saving of system programs?

Dick Smith Electronics had such a patch 1 year ago but it is no longer on the market. Any help you can offer would ge greatly appreciated, or failing that, which new DOS you consider would do the job on both BASIC and SYSTEM programs.

(Unfortunately we know of no such patch other than the one you have mentioned. Perhaps one of our Readers can be of some help. For your information, Pertec, the publishers of OS/80 have now discontinued it completely so no further support can be expected from that quarter. There is a number of readily available DOS's which will do the job your require and much more besides: LDOS (from Tandy), DOSPLUS and NEWDOS 80 (from MICRO-80) — Ed).

# NOTES FROM THE SOFTWARE EDITOR

**BY Ed Grigonis**

The purpose of this short (well it was going to be when I decided to write it!) column is to try and give you an idea of what I, as Software Editor, will be looking for when receiving program submission from readers.

The following comments should give you an idea of what to try (and also what to avoid!).

**1. COCO PROGRAMS!!!!**

The CoCo is now entering a very exciting new phase in its existence with the release in this country of the 64K CoCo. OS9 is already available. This long overdue move into the 'bigtime' of sophistication will open many new avenues of exploration for the CoCo user. Unfortunately, unless YOU, the readers, continue to provide us with programs and articles for publication, Micro-80 will be unable to participate in this new area. YOU will lose out just as much as we do! So how about it? I know you won't get rich on what we can afford to pay you but how else can you have someone-else subsidise your hobby?

I don't expect your efforts to be up to the standard of the programs we have available for the Model I, etc. so you don't have as much to sweat about. We won't, however, publish anything just to keep the CoCo covered. So a little flashy stuff would help!

**2. GAMES**

They will, however, have to be very good. Having looked at what we already have available for publication I can say that your chances of getting a game accepted will be vastly improved if you give it a lot more thought than you would expect to. Having said that, I will always be attracted to something new and well implemented.

If you want to emulate an arcade game make sure it is one which hasn't been done to death (i.e. copies of the original 'Space Invaders' have got no chance unless they are for the CoCo and are also fairly competent efforts).

A good Adventure will have a good chance but only if you include the solution so that I can verify that it is solveable without having to spend too much time on it. In fact, if there is enough interest, I will be very happy to look at databases created by and for "The Adventure System".

I am always a sucker for a well implemented card game. Forget about Poker and Blackjack. On the other hand, Cribbage and Canasta are definite possibilities or, in fact, anything which hasn't been done before as long as it is done well.

If you can write a program to score for Mah-Jong you will be my friend for life! If you can write a program to actually play it you can be assured of publication provided that it is bug free and operates in accordance with all the rules of the British Mah-Jong Association as included in "Know The Game — Mah-Jong", published by EP Publishing Limited in conjunction with the British Mah-Jong Association. Sorry, no American rules.

Interesting implementations of boardgames will have a good chance of acceptance provided that the original game is a popular one. Games to assist in the playing of those multi-million-counter simulation games will also be of interest if the game is well known.

Has anyone got a program to help play Avalon Hill's 'Kingmaker'?

GAMES TO FORGET — Noughts & Crosses, Acey-Ducey, Hangman (I am unable to conceive of anyone writing a better Hangman than the one published in January 1982) and anything else which has been done to death.

**3. UTILITIES**

There are more than enough monitor/debuggers available for the Model I, etc. so these have no chance unless they are good enough for commercial publication, in which case you are doing yourself an injustice by sending such a program to a magazine. There is probably room for a couple of simple monitors for the CoCo.

Disk utilities are always welcome, but you will enhance their appeal if you can make them DOS-independent. Although if your particular DOS is screaming out for a particular utility then let us see your efforts at providing one.

If anyone can write a utility to provide TRS-80 graphics using the high-res mode of the Epson MX-80 F/T III, you can be confident of publication provided that it works. Include enough information to assist users of other printers to modify it to suit them.

Any other disk or tape utilities will also be welcome.

**4. LOTTO PROGRAMS**

We have yet to see one of these for the CoCo. To get accepted such a program would have to do more than just pick random numbers and should ideally analyse a database of previous draws, although you may have a better method. Options should be provided also for Mid-week Lotto and the Pools.

We already have enough Lotto programs for the Model I, etc. so about the only chance you would have of getting a new one accepted would be if it used the method outlined above and was in machine language. I'd be surprised if anyone wanted to put that much effort into it!

**5. EDUCATIONAL PROGRAMS**

More of these are very welcome provided they are soundly done and have educational value. Authors of these programs will generally know what is acceptable.

**6. GENERAL COMMENTS**

If its a new idea and works well, I am very interested. If its been done before, think twice before sending it in.

I don't wish to denigrate anyone's first efforts, but I would suggest that, particularly with the Model I, first efforts are at a disadvantage as they would be unlikely to match the general standard of the programs we already have on file. Don't let this stop you from sending it in if you consider it is worthwhile. Just try and consider how it would compare to other efforts. Try and include every improvement you can think of. You will learn more and you will increase your chance of acceptance.

**7. FORMATS**

If you want to get on my good side you will submit your programs using the following guidelines:

a. Tapes for the Model I, etc. will all be recorded at 500 baud. If I can't load it, you will have to wait until I can access a Model III to try it out.

b. Model I disks should be on either TRSDOS, DOSPLUS or LDOS data disks. If you have to include it on another DOS's disk, let me know how it was done (i.e. PDRIVE settings, etc.) to improve the chances of me being able to access it. Single density only, please, if it isn't on one of the above DOS's!

c. Model III disks on LDOS or DOSPLUS single or double density are fine. Any other DOS's should include complete details on how the disk was created in order to improve my chances of accessing it. Again, this is simply to avoid the wait while I get hold of a Model III. The earlier I can read it, the quicker you get back your disk (include postage).

d. Editor/Assembler files should be in Tandy Model I format or for the Apparat modified-for-disk version. EDAS may be acceptable. Anything else may not work.

e. Text files should preferably be Scripsit files or straight ASCII files.

f. If you have to provide any other format, let me know what you've done so I can try and get at it.

**8. DOCUMENTATION**

Read the documentation dealing with programs provided in this and other issues of Micro-80. Convince yourself you can do better. Then prove it!

Use a dictionary if you need it. Simple spelling mistakes in documentation and programs detract from their appeal. I also don't want to have to spend time correcting them.

If I have to rewrite documentation the publication of the program will be delayed no matter how good it is. I'll do it, but only when other tasks are out of the way.

I hope the above guidelines haven't discouraged any of you as that was not my intention. I am simply trying to make my job more enjoyable and, more importantly, improve your chances of making a sale.

I look forward to seeing your efforts!

# REVIEWS

## ZORLOF—THE MAGNIFICENT WORD PROCESSING SYSTEM — A SOFTWARE REVIEW

**by John Lessur**

**GETTING STARTED**

As ZORLOF is supplied on a data disk with no system, the initial requirement to use ZORLOF is a suitable DOS. I am using DOSPLUS 3.4 with 2 disk drives and a Percom Doubler on a Mark II System 80 (Video Genie) with an Epson MX100 Type III. However, TRSDOS, NEWDOS, LDOS and MULTIDOS are also supported as are most printers commonly available. The system will work with a single disk drive although capacity is obviously more limited.

.ZORLOF is loaded onto drive 0 with the DOS. To start, DOS is entered and ZORLOF is called. Now text may be typed in directly to the screen. The text input is simple and straightforward.

**FEATURES**

As a second generation word processor, there are many features which are excellent. Some of these are the ability of functions to repeat if a key is held down, upper case lock, upper and lower case conversion, word wraparound at the end of a line and full screen editing. Text can be scrolled up and down in lines or in full screens as required.

The general layout resembles Wordstar in that the upper two lines on the screen are devoted to status information such as the name of the document, the word count, and the number of lines in the document as well as other details. Only thirteen lines are shown on the screen, but this provides a good view of the text.

Most of the functions are accessed by two keystrokes. For example, CLEAR I turns ON the INSERT mode. Most modes operate by function toggles. For example, a second CLEAR I turns OFF the INSERT mode.

Loading an existing file is logical and ergonomically sensible. Once the directory is called (CLEAR-D), the cursor can be moved to the required file with the up and down arrows. If the Get File command (CLEAR-G) is given with the cursor beside a filename then that file is loaded.

The search function is particularly powerful. A word or word segment including blanks can be specified. Capitals and lower case are treated equally. Search, search and automatic replace, and search and automatic delete are available.

Text can be deleted in four ways — a single character left or right may be deleted, a single word, a full or part line, or whole blocks of text may be eliminated with the use of block markers.

ZORLOF is particularly effective with long documents of many pages. Here the header and footer facilities are most useful. The paging arrangements are also good providing for odd and even paging and numbering can be set at any point along the page.

One interesting feature is the View Text option which allows the final form of the document to be viewed on the screen before printing. In this mode the printer and editing commands are removed and the text resembles its final printed form. A few forms such as superscript or subscript and underline cannot be displayed.

The word processing system as provided includes a mailing package for form letters. There are no serious restrictions on the length or type or letter, nor on the variable fields for the letter. An example form letter with a mailing list is included on the disk supplied.

**PRINTING**

This is probably ZORLOF's most powerful area. All the usual functions such as right and left margin controls, justificaiton and centring, single, double and multiple spacing are present. However, in addition, there are commands for the more sophisticated controls of some printers such as the Epson MX series, the C.ITOH F10 and 8500 series and the NEC spinwriters. In all, some 60 printers are supported. The printer can be defined by just two or three keystrokes. Many other controls such as right or left justification or centring are also achieved by two keystrokes. It is possible to make use of the expanded and condensed character modes available on some printers.

You can make use of other special features such as bold face, underline or italic by defining the special treatment of the word. Alternatively these and other functions can be defined by printer control codes. Usually these are placed at the beginning of a line but they can be embedded in the text if necessary. One slight surprise was the lack of a formfeed instruction in the ZORLOF set. Presumably, this is not done using printer control codes because the line count will be destroyed. Instead, a GoTo Line 1 command can be used to force line one of the next page.

All layout, setting and end printing instructions are embedded with the text. Unlike LAZYWRITER there is no option to print part of the text after the print instruction. Similarly, printing cannot be started from the cursor which is positioned midway in the text.

**PROBLEMS**

The superscripts and subscripts do not work as claimed but this is because on the Epson, the condensed mode is required to print effectively. The correct codes can be entered directly but this is more cumbersome. A different printer, particularly one with a reverse line feed capability, may not have any difficulty.

Two characteristics of moving around the screen are also irritating. One is the inability to reverse the word wraparound from the left of a lower line to the right of the line above. Instead, you have to move up a line and then run across. The other is the difference between moving down the screen which requires the DOWN arrow, and moving down the text by screens of text, which requires the UP arrow with CLEAR. This is particularly confusing when both operations are combined during checking.

One feature which is lacking is the ability to reverse indent. This feature allows numbering or highlighting but setting the first line of a paragraph a set number of spaces to the left of the margin. It is a particularly useful feature of LAZYWRITER when numbered paragraphs or paragraphs with headings are needed.

**DOCUMENTATION**

This is one of ZORLOF's strongest features. There are 96 pages in the manual and a good two age index on a separate card which doubles as a quick reference. The manual is clearly written with many examples to assist understanding. Also two examples of work are included on the disk to aid the novice. One is the first few pages of the manual, the other is a form letter with a separate address file. The manual itself is firmly bound in a plastic cover with pages of fairly heavy paper. In all, it looks and feels built to take the continual thumbing that a manual for a sophsticated system must withstand.

When you buy ZORLOF you also buy support. Included in the purchase price is a one year subscription to the Anitek newsletter, 'Nibbles and Scribbles', which supplies advice and patches for users. Subsequent subscriptions can be purchased for $US10. Anitek also provides personal advice, but they do ask that you refer to the manual first. If you want to put a patch in your system but are timid or inexperienced, Anitek will do it for you for a nominal charge of $US55.00.

**THE MONEY**

ZORLOF sells in the U.S.A. for $US69.95, which translates to about $A75. However, customs duty and sales tax on import into Australia add a further $A54 before you get it. Even with this hefty penalty, it is a word processor which represents excellent value and is available from: ANITEK SOFTWARE PRODUCTS,
P.O. BOX 1136,
MELBOURNE, FLORIDA, 32935
U.S.A.

**IS ZORLOF FOR YOU?**

Those who have read this far will realise that this is a very powerful word processing system. If you do not have the patience to spend three of four hours learning the system and only want to write letters, then this may not be for you. However, if you already have some word processing background, then it is quite easy to learn. If you are dissatisfied with your current system, then ZORLOF probably has the things you need.

This system will appeal particularly to anyone writing three or more pages, who likes to have his pages numbered neatly and likes to avoid too many drafts. Writing articles for magazines is easy but writing scientific articles is something which most word processors cannot manage. They are defeated by the need for special characters, and the superscript for reference is often awkward. In both these areas ZORLOF is exceptionally good. Anyone who is the secretary or treasurer of a club will be interested in the form letter facility. Like many of the better word processors, the system can be used for BASIC and EDTASM program development as well as ASCII word processing.

A few years ago WORDSTAR and LAZYWRITER were the benchmark for comparison of other word processors. Now we may have a new comparison standard in ZORLOF.

## THE ACCEL4 COMPILER A SOFTWARE REVIEW

**by Dayal Abeyasekere**

A BASIC Compiler for the TRS-80 Models I, III and IV.

Compilers translate programs written in high level languages like BASIC and FORTRAN into machine language. The resulting machine language programs usually run much faster than the high level language versions from which they are derived. The most important disadvantage of compilers written for small microcomputers has so far been the very long time a compilation may take — usually tens of minutes. And so, unless you run the compiled program often enough without any modification, the time advantage gained by running may not compensate for the time lost by compilation. A fresh compilation is required whenever the program is modified.

The ACCEL4 compiler usually takes less than about one and half minutes to compile even some of the very long programs. It compiles about 6 lines per second. The full set of Disk BASIC instructions are usable with the ACCEL4 compiler. In other words, a BASIC language program which will run without errors on a TRS-80 Model I, III or IV computer under TRS-DOS or LDOS disk

BASIC, will run without errors after compilation by ACCEL4. To every such general rule of software compatibility, there is always some kind of exception: ACCEL4 does not compile BASIC instructions which involve input and output to disks, to the VDU and to other Input/Output devices. Compilers cannot do very much to speed up those operations — they depend on the speed of the slowest components of the computer system. ACCEL4 therefore leaves all such input and output instructions unchanged in interpreter BASIC form. And because ACCEL4 compiled versions are a mixture of ordinary BASIC language statements and machine language statements, there are certain important extra rules which should be observed if the compiled program is to be error free. All FOR—NEXT loops must be very well structured and formed in pairs: there must not be more than one NEXT corresponding to any one FOR. Each FOR statement and each corresponding NEXT statement should be on separate lines. Each Input or Output instruction should be on a separate line.

Multiple statements containing only arithmetic and logic operations can be used on the same line in BASIC programs which may be compiled and run without compiler generated errors when using ACCEL4. The use of multiple statements in each line and introducing variable names into the program in the order corresponding to their frequency of actual use when the program is run, speeds up program runs. This is referred to as "coding for speed" or "fine tuning the program".

The speed improvement ratio varies from about 7 for string handling to about 170 for integer handling operations, when an interpreter BASIC instruction is compiled into machine language using ACCEL4. Input and Output operations are unchanged in speed.

The program disk available to purchasers of the current version of ACCEL3/4 contains ACCEL3 and ACCEL4. ACCEL3 is an older version which occupies almost 6K bytes of RAM when called on to compile a BASIC program. ACCEL4 is the most recent "overlay" version which is modular. It loads whatever module is required at any one time, thus requiring less than 160 bytes of RAM to perform all the different functions of the compiler.

The compiled programs are usually not much larger than the BASIC language versions from which they are derived. They can sometimes be smaller, i.e. they may occupy less RAM space.

Using the compiler is very simple. Even simpler than what may appear from the instruction manual which comes with the 1982 version of ACCEL3/4. The procedure may be summarised as follows:

1. First time Compile and Run:
   READY
   LOAD"PROGRAM/BAS"(ENTER)
   (A BASIC program called "PROGRAM/BAS" will then be loaded from disk into RAM memory. Refer the relevant section on file naming in the TRSDOS & Disk BASIC Reference Manual if you are not thoroughly familiar with the different parts of a disk file name).
   READY
   CMD"I","ACCEL"(ENTER)
   (The ACCEL compiler will load from an online disk and perform the compilation. The starting of this process is shown by the appearance of the logo shown below. CMD"I" allows DOSREADY load formatted programs to be run from BASIC).
   ACCEL3/4(C) COPYRIGHT SOUTHERN SOFTWARE 1982
   1234 1123 1345
   (The three numbers on the line above appear one at a time as the compilation proceeds. These numbers are of interest only to those who are concerned with what is where in the computer memory. Ignore these numbers.)
   READY
   SAVE"PROGRAM/ACC"(ENTER)
   (This is to save the compiled version of the program. N.B. If the BASIC source code had not been saved as a disk file, no record would be available of the original BASIC source code. PROGRAM/ACC is the name of the disk file under which the ACCEL4 compiled version of the program will then be stored. The file name extension /ACC is recommended for ACCEL4 compiled programs).
   RUN(ENTER)
   The program called "PROGRAM/ACC" which is the ACCEL4 compiled program derived from "PROGRAM/BAS", will then run like a rabbit by comparison with the tortoise of a BASIC Program from which it is derived.
2. Running the Compiled program:
   First you have to make certain that relevant modules of ACCEL4 which are required to run ACCEL4 compiled programs are available on an on-line disk. The compiled program, e.g. PROGRAM/ACC as from above, should also be available on an on-line disk. From Disk BASIC command level:
   READY
   CMD"I","ACCEL"(ENTER)
   (This prepares the memory and computer system environment for an ACCEL4 compiled program to be run).
   RUN"PROGRAM/ACC"(ENTER)
   (That is all there is to re-running the compiled program).

One great advantage of compiled programs, even when some of the program statements are in machine language, is that those who wish to construct slightly modified forms for selling them are then faced with the not very worthwhile task of deciphering the machine language part. This prevents "modification" type of pirating, which is often within the law. It does not prevent the "whole program copying" type of pirating which is clearly illegal.

Run time modules of ACCEL4 must be available on an on-line disk and the compiler must have been activated by the BASIC command instruction, CMD"I", "ACCEL", at BASIC command level for any ACCEL4 compiled program to run. ACCEL4 compiled programs can be sold together wtih the RUN time modules of the ACCEL4 compiler, within the explicitly and freely granted permission from Southern Software, the copyright owners of ACCEL4. Many specialist applications programmers in the U.S.A. are in fact making use of this opportunity.

Those who have that level of skill will find no difficulty in following the simple instructions described in the ACCEL4 user manual to do all that is necessary for their purposes.

Beginners, however, would be helped a great deal if ACCEL4 user manual authors confine the introductory section to explaining the "Generating and Running an ACCEL4 Compiled Program". Users feel a great deal more confident when they have followed simple instructions and used the software. Although the user manual authors clearly state that ACCEL4 would be the preferred software, by attempting to combine instructions for using two earlier versions, which are clearly not as efficient, they make the introductory sections unnecessarily complicated for the vast majority of ACCEL users who would never use any option other than the ACCEL4 module set.

In summary, ACCEL4 is a very easy to use fast compiler. It produces compiled programs which run much faster than the interpreter BASIC Programs from which they are derived. It is much less expensive than any other BASIC compiler around.

It is available from Southern Software, P.O. Box 39, Eastleigh, Hants, 505 5WQ, England, or from MICRO-80 for $140.

# A REVIEW OF THE TRS-80 MODEL 4

**CONFIGURATION OF REVIEWED SYSTEM.**
**TRS-80 MODEL 4**
**64K RAM**
**2 DOUBLE DENSITY 40 TRACK DRIVES**
**70 KEY KEYBOARD**
**TRSDOS Ver. 6.0 DOS**

**by Charlie Bartlett**

The TRS-80 Model 4 turned up here at the Software Department to be reviewed, it arrived in its original packing, that being large amounts of foam packing to protect it from damage. Out it came from the box and onto the desk, where my reaction was . . . BIG DEAL a Model 3 in an off-white case.

I must admit that my initial reaction was coloured not only by its similarity in shape to a Model 3 but also by a largely negative review that I had read just days before in an American magazine and also of course in this job I get to see a lot of different computers and I suppose I am hard to impress by now.

Well I must now wipe the egg off my face and eat humble pie, because after just a few hours of examination I only have one reaction left . . . I LOVE IT. Such power and flexibility in a microcomputer I had never expected to see. The Model 4 has so many new features that I want to tell you about I fear that I am bound to miss some, so armed with the operating manual at my side as a memory jogger we will go

through it together and note the major enhancements and differences, (I say major because the manual is 3cm thick and we can't cover everything in the space available), between it and the other TRS-80 types, I will presume that the reader has knowledge of disk operating systems in general.

**GENERAL**

The Model 4 has 64K RAM which is expandable up to 128K with a Z80 microprocessor running at 4 MHz. The computer has a green screen with upper and lower case display of 80 characters by 24 lines, (or a CHR$(23)) display of 40 characters by 24 lines.

If a TRSDOS Ver. 6.0 disk is inserted on power up or reboot the display is configured as above, however if a MODEL 3 disk is inserted then onboard ROMS switch out a bank of RAMS and switch in Model 3 ROMS which then give you a 64 by 16 display and the MODEL 4 will then run MODEL 3 software. In a way you are getting two computers for the price of one. The character generator contains lots of special characters besides the normal upper and lower case, one of the control codes for example gives you reverse video, that is a light green background with dark green characters.

The Model 4 allows variable names with up to 40 digits being significant, it is probably due to this that the MODEL 4 is VERY FUSSY about spaces around keywords, this takes a little while to get used to but is soon overcome. Someone new to computers probably wouldn't notice, the only people it trips up for a while is us old 4K packers from the old days. OK, back to the book, lets run through the DOS section first taking each command as we come to it. If a DOS command is fairly standard with no significant changes I will list it as follows just so you know it is included in the DOS.

| | |
|---|---|
| APPEND | standard<br>Meaning it's there but still works largely the same as you know it. |
| ATTRIB | standard |
| AUTO | standard |
| BACKUP | standard |
| BOOT | standard |
| BUILD | This has optional parameters that allow you to build the file in HEX characters which allows you to build a file containing control characters or graphics. The option to APPEND is also provided. |
| COMM | This is a very involved command that allows communication via the RS232 port with another computer. It takes 17 pages of the manual to describe so I won't attempt it here. |
| CONV | This is used to move MODEL 3 TRSDOS Ver 1.3 files to a Model 4 disk. |
| COPY | standard |
| CREATE | standard |
| DATE | standard |
| DEBUG | standard |
| DEVICE | Displays the status of the drives and the options selected, also the data paths of logical devices and route or link paths. |
| DIR | standard |
| DO | enhanced, but similar in function. |
| DUMP | standard |
| FILTER | This has multiple uses, but in its simplest form it could be used to filter out control characters as they were sent to a printer. |
| FORMAT | standard |
| FORMS | standard |
| FREE | standard |
| LIB | Displays three libraries (A) (B) and (C) |
| LINK | Links together two logical devices |
| LIST | standard |
| LOAD | standard |
| LOG | Hard disks only |
| MEMORY | lets you set HIGH and LOW memory |
| PATCH | for patching m/l files |
| PURGE | standard |
| REMOVE | similar to KILL |
| RENAME | standard |
| REPAIR | used to convert MODEL 1 TRSDOS disks to be readable by the MODEL 4 |
| RESET | Closes an open filespec or resets a device to its original start up condition. |
| ROUTE | standard |
| RUN | executes a program from a non system disk for single drive user. |
| SET | sets a driver or filter program to a device. |
| SETCOM | used to set the parameter values of the RS232 driver |
| SETKI | sets keyboard repeat parameters |
| SPOOL | standard |
| SYSGEN | creates a configuration file on your drive to store information about your system |
| SYSTEM | configures certain areas of your TRSDOS system, like the type of cursor you require and whether it blinks and whether the BREAK key is to be disabled etc. Also configures the drives. |
| TAPE100 | Lets TRSDOS read or write a MODEL 100 tape |
| TIME | standard |
| VERIFY | standard |

Those are the DOS commands, I know that I have not done justice to the power of some of them, but if I did we would need a whole book just for this review. Now for the BASIC in this machine, one of my few criticisms is that although the EDITing functions are the same as the LEVEL 2 MODEL 1 computer they don't have the enhancements that are provided by some of the MODEL 1 DOS's.

The following commands and functions vary in no great degree from other versions of Basic:

| | | | |
|---|---|---|---|
| ABS | ASC(n) | ATN(n) | AUTO |
| CDBL(n) | CHR$(n) | CINT(n) | CLOSE |
| CLS | CONT | COS(n) | CSNG(n) |
| CVD | CVI | CVS | DATA |
| DATE$ | DEFDBL | DEFINT | DEFSNG |
| DEFSTR | DEF FN | DEF USR | DELETE |
| DIM | EDIT | END | EOF |
| ERL | ERR | ERROR | EXP |
| FIELD | FIX | FOR | NEXT |
| FRE | GET | GOSUB | GOTO |
| IF | THEN | ELSE | INKEY$ |
| INP(port) | INPUT | INPUT$ | INSTR |
| INT(n) | KILL | LEFT$ | LEN |
| LET | LINE INPUT | LINE INPUT$ | LIST |
| LLIST | LOAD | LOC | LOF |
| LOG(n) | LPRINT | LSET | MEM |
| MERGE | MID$ (replace) | MID$ (sub-string) | MKD$ |
| MKI$ | MKS$ | NEW | ON GOTO |
| ON GOSUB | ON ERROR GOTO | OPEN | OUT |
| PEEK | POKE | POS(n) | PRINT |
| PRINT USING | PRINT TAB | PRINT# | PUT |
| RAN-DOM | READ | REM | RENUM |
| RESUM-E | RETUR-N | RIGHT$ | RND |
| RSET | RUN | SGN | SIN |
| SQR | STOP | STR$ | STRING$ |
| TAB | TAN | TIME$ | TROFF |
| TRON | USR | VAL | |

The following are either new or enhanced Basic commands:

| | |
|---|---|
| CALL variable | This transfers program control to a m/l subroutine stored at "variable" |
| CHAIN | Loads a Basic program and chains it to the main program and runs it. |
| CLEAR | The syntax of this is CLEAR, mem, stack mem is highest memory location available for Basic and "stack" is used to define stack space |
| COMMON | Reserves space for variables so that they can be passed to a CHAINed program. |
| ERASE | Erases one or more arrays from a program so that you can either redimension them or reclaim the memory for other purposes. |
| ERR$ | Prints an error message string. |
| HEX$(n) | Returns "n" as a Hexadecimal string. |
| INPUT$(n) | Inputs "n" number of characters from the keyboard |
| INPUT$(n,b) | Inputs "n" number of characters from the sequential disk file buffer "b" |
| LPOS | Returns the logical position of the printer head. |
| NAME | Renames a file |
| OCT$(n) | Computes the octal value of "n" and returns it as a string. |
| OPTION BASE (n) | Sets "n" as the minimum value for an array |
| PRINT @ | This has the old syntax of PRINT @ location it also has an alternative syntax of PRINT @ (row, column) |
| RESTORE line | Restores a programs access to previously read |

DATA statements beginning at "line"

SAVE — This has the normal syntax to save a program with the added form of SAVE "filespec", P which saves the program to disk in a protected form so that it can only be LOADed or RUN it cannot be LISTed or EDITed.

SPACE$(n) — Returns a string of "n" spaces.

SPC — Print a line of blanks (not string).

SWAP — Exchanges the value of two variables.

SYSTEM — Returns you to TRSDOS.

SYSTEM (com) — Executes the DOS command "com" from Basic.

VARPTR — This has its original syntax plus the syntax VARPTR (# b) where "#b" is a disk buffer and varptr returns its location in memory.

WAIT — Suspends program execution until an input port develops a specified bit pattern.

WHILE — Execute a series of statements in a loop as long as a given condition is true.

WEND — End of WHILE loop.

WRITE — Writes data on the display

WRITE# — Writes data to a disk file.

Quite a list isn't it. As if all of that was not enought it has "TYPE AHEAD" on the keyboard, that means that no matter what the computer is doing . . . saving or reading a disk or whatever, you don't have to sit and wait for it, as long as you know what you want to type and you don't mind typing blind, you can type it in and the keyboard will remember it. Then when the computer catches up it will display what you typed and act on it. Lastly you can also define the keys from A to Z to perform what you want them to do, a built in single key entry system. I don't think I have missed too much in this review, but even if I had I think that there is enough here to point out that with this machine the TRS-80 has finally come of age.

My thanks to the Tandy corporation for the loan of this machine and to sum up, the only thing I don't like about this Model is that it is not mine.

# SOFTWARE

## ALIEN CHASE (Hitachi Peach)

**by D.C. Kelly**

The object of this game is to destroy dots located in a grid. These dots are worth ten points each.

You are required to specify a number from 1 to 10, which determines the number of aliens against which you will have to compete. The bigger the number, the slower the program will run. The author recommends four aliens for optimum performance. These aliens will pursue you and will also consume any dots they pass over, lessening your possible score.

It appears that the only way to destroy dots on the edges of the screen is to attempt to manoeuvre the aliens over them. If you go to the edge of the screen yourself, you will get stuck.

When you have despaired of clearing the last of the dots, hitting "R" will give you a new screen.

## CRICKET (CoCo)

**by N. Cooper**

Cricket is for two players, one is the bowler and one is the batsman. The bowler uses the right and left arrow keys to line up his bowl and presses (B) to bowl. When this has been done, the batsman will appear. He uses (1) to go left and (2) to go right. The blue strokes that appear on the field are the fieldsmen. If the ball hits one of the strokes, the batsman is caught.

Sometimes when the batsman hits the ball, the tone will sound for a hit, but the computer may say that you are bowled. This is because the batsman hits the ball and it gets an edge and goes onto the wicket.

If you run the program and the computer 'locks up' then this is because your computer will not take the POKE statements in lines 100, 940 and 950. You should delete the statements, but the program will execute a lot slower. If your computer does take the statements and you 'BREAK' the program during execution then it is necessary to POKE 65494,0.

The main variables used are:

| | |
|---|---|
| X | X coordinate of the ball |
| Y | Y coordinate of the ball |
| O | X coordinate of the batsman |
| I | Y coordinate of the batsman |
| SC | Number of runs made |
| OU | Number out |
| W | Direction of ball |
| F | Distance ball travels |

## NIGHTMARE PARK (Level II/4K)

**by L. Higgs**

The object of this game is to travel through, and leave, Nightmare Park without being killed by one of its many dangerous inhabitants.

Each time you successfully escape from an attacker, you score one point. A score of ten points allows you to leave the park.

The Dangers of Nightmare Park occur in a random sequence and you may require either skill or luck.

To tell you more would give too much away.

(This game can have you quite frantic. It is also mildly addictive — Ed.)

## FILM PRODUCTION COSTING (L2/16K)

**by B.J. Fillery**

For TRS-80 Level II 16K. Will run under Disk Basic.

If you've ever sat down with a calculator and a great sheaf of paper to work out a film costing, you will know why I wrote this program. It can take you days to do, and even then you can forget things and run over budget.

This program is designed for in-house documentary film production, not your grand epic, so it is designed small. As it stands there is no provision for crew, talent, hire of equipment or travelling & accommodation, but there is room to add any features that you may need.

In addition to costing films, you often need to do some calculations of film projection times, so I have included a pair of program that will convert Film Time to Film Length, and Film Length to Film Time, in both 24 and 25 fps format. As most film makers seem to still be working in feet, I have not bothered to include a Metric Conversion of Film Length. The program is designed to be used by people with little or no knowledge of computer programming, so each set of data that is added is required to be checked by the operator before the computer accepts it. If it is not correct, you don't have to start all over again, the program returns you to the start of the last section.

To keep the program as small as possible I have included constants for some items. There are Number of rolls of magnetic ¼" tape (Line 1100 — SR*20), Rolls of 16mm Mag Film (Line 1110 — SM*4), Hours of Sound Transfer time (Line 1120 — ST*5), Sound Mixing time (Line 1130 — SX*5). In Lines 1190, 1200, and 1220 the cost of Heads, Tails & Leaders is HT = ??, Synching A & B Rolls is BA = ??, Synch, Freight & Reels is SY = ??

If you want you can include these items in the program just by altering the figures, however if you want to include all these items in the main costing program you'll have to add the required lines after Line 195. There is plenty of room for this, just follow the format of the previous sections. Remember however, to make the return line for your "Is Data Correct so far" question, to the start of your new section each time, not to the start of the previous data.

You will also have to make alterations to the printout routine (Lines 300-660) and the screen printing lines (1000-1310). The program also includes a printer routine which was designed for the Epson MX 80. This can be altered for other printers as required. You need have no fear of including the printer routines in the program as there is a default line. If the printer is not on, or you don't have one attached, it will just return to the "Do you require print out" question until you answer it correctly.

In the calculations there are allowances for the usual practice, at least in Australia, of charging for slightly more film than you get printed. If you get 400 feet of film work-printed you get

charged for about 430 feet to allow for start and end on the roll. This has been allowed where needed. It would be advisable to leave it in as the additional cost is small and if you aren't charged for it by the Lab, you will at least be assured of coming out under budget.

In Line 35, the date input can be any format that you require to appear in your program, either Day Month Year, or Month Day Year. I can also be — July 25th 1981.

The shooting ratio is calculated to come out to the next highest roll, assuming that you're shooting 400 ft rolls. In this way you don't get an answer such as 8.73 rolls, it would come out as 9 rolls.

The Cost of Recording Tape referred to in Line 85 is for calculating the ¼" tape used on such recorders as the Nagra or Stellavox, the standard 5" spool.

If you only have a 4K TRS-80 and do not require the printer option, you can delete lines 290 to 660. This plus some joining of lines should give you enough space to run the program. The program will run under Disc Basic. If you want to save your data for future use it would be quite simple to alter the code to do this after the printout section. You would need to put in new lines after Line 650, retaining the Goto instruction of Line 660 at the end of your addition. The format for the save data would be the same as for the printout, but ignoring Z$.

You will also require another menu for the input of data from tape or disc. This would need to go in around Lines 20-25, possibly by deleting the introductory wording that is there. One advantage of this program is that it can be altered for other types of costing programs by using the basic form it is in but altering the wording and calculations. In this way it is not just applicable to the Film Industry.

## ADIR — utility (48K/Disk)

**By Carl Cranstone**

ADIR — short for Automatic Directory (pronounced Ay-der) is a utility written for NEWDOS80 Ver. 2.0.

It was written initially as an experiment with the routines in the Disk Operating System but ended up as a fully working & running utility program.

The capabilities of ADIR are:

Flashing cursor, execute programs by pressing ENTER, COPy files from any disk to another, KILL files, LIST files, DO files (/JCL type), reBOOT the DOS, LOAD files, display FREE space on drives, FORMAT diskettes, RENAME files, display TIME & execute most commonly used programs with one key.

1. The flashing cursor

With the flashing cursor, you can move it over a filespec on the screen and KILL, LIST etc. the program. You move the cursor with the arrow keys.

2. Execute programs with ENTER

Moving the cursor over a filespec and pressing ENTER will execute the program providing it is a BASIC program or a CMD type program.

3. Copy

Copy will copy a program from one drive to another but not to the same drive.

4. Kill

Move the cursor over the filespec and the program can be KILLed.

5. List

The same as KILL but LISTs the program.

6. DO

Will execute the filespec at cursor position as a DO file or CHAIN file.

7. Boot

Boot will reBOOT the computer.

8. Load

Load will LOAD a program. LOADing a program which loads in the same area as ADIR will result in a crash, farkle, freeze-up or lock-up. (Depending on your choice of words)

9. Free

Will display the FREE space on all available drives.

10. Format

Will FORMAT a disk, including DRIVE 0. (be careful that you don't try this on your System Diskette!)

11. Rename

Will RENAME a filespec to a new filespec.

12. Time

Will display the current TIME. (providing that the TIME has been correctly set previously)

**How to execute the program**

Type 'ADIR' or 'ADIR x' or 'ADIR,x' where x is a legal drive number.

The default, (i.e. no drive specified), is zero.

Once the program had executed, a DIRectory of a disk should be displayed.

**WARNING: Errors that occur are not intercepted!!!!!!**

**Any errors that may occur are normally "swallowed" (ignored). Some errors are displayed.**

If you press the 'H' key, a menu will be displayed which shows you what happens when you press each key on the keyboard.

The keys are set up in the program listing as follows:

| | |
|---|---|
| A | Load the program DISASSEM/CMD |
| B | BOOT the computer |
| C | COPY the program at cursor position to drive x |
| D | DIR |
| E | LOAD the program at cursor position |
| F | FREE |
| G | DO the program at cursor position |
| H | HELP display the menu page |
| I | FORMAT,x formats the drive x. |
| J | JKL performs a screen dump |
| K | KILLs the program at cursor position. Verifies. |
| L | LISTs the program at cursor position |
| M | executes the program BASIC/CMD |
| N | performs the command BASIC2 |
| O | executes the program LMOFFSET/CMD |
| P | see DIR. output sent to printer |
| Q | Quit, returns to DOS READY |
| R | RENAMES program at cursor position. Asks for new name |
| S | executes the program SUPERZAP/CMD |
| T | displays the TIME |
| U | executes the program CHAINBLD/BAS |
| V | executes the program DIRCHECK/CMD |
| W | executes the program SCRIP/CMD |
| X | executes the program PENCIL/CMD |
| Y | executes the program BMON/CMD from BASIC |
| Z | executes the program EDTASM/CMD |
| 1 | jumps to DEBUG |

Where necessary, you will be asked for DRIVE (0-3)? Simply press the number 0-3.

You may also be asked ARE YOU SURE? This is a verification check. Pressing 'Y' will continue with the command, any other key will abort the command. This is useful in case you accidentally press 'K' for KILL or 'I' for FORMAT.

**Modification for other DOSes?**

Only people who are familiar with Assembly Language should attempt this. The program can be converted to run on NEWDOS80 Version 1.0 and DOSPLUS 3.4 (though 3.4 users if they upgrade to DOSPLUS 3.5 get a program similar to this anyway).

I have NOT successfully converted this program for NEWDOS 2.1 or TRSDOS 2.3.

The DOSes I have are NEWDOS80 Ver 1.0 & 2.0, DOSPLUS 3.4, TRSDOS 2.3 & NEWDOS 2.1

ADIR uses DOS routines at 440D, 4419, 4405 & 402D.

440D — this is the direct entry point to DEBUG

4419 — this will execute the LIBrary command pointed to by HL, perform it and return to the program

4405 — this does the same as 4419 but does not return to the program, instead it exits

402D — return to DOS READY.

From the information I have, DOS PLUS uses 4405 but not 4419. By changing the EQU in line 150 to 4405 as well should eliminate this problem.

TRSDOS 2.3 & NEWDOS 2.1 are both similar. From the information I have, they both use 4405, 440D, 402D but not 4419.

As for LDOS, MULTIDOS, ULTRADOS, SILLYDOS, ANYDOS etc.

you will have to consult your (gasp..arrghh!!!) manual.

**The program listing**

Lines 140-230 contain all the EQU's. Check these to make sure they are compatible with your DOS.

The EQU 431D is an easy one to check. With DEBUG active type 'ABCD,E' from DOS READY. Wait for the PROGRAM NOT FOUND message and then enter DEBUT (NEWDOSO users press 123, DOSPLUS etc press BREAK).

Look at memory location 4300. At 431D you should see the 'E' with the other 5 characters before it. If not, look through the memory forwards & backwards until you do. (It has to be there somewhere!)

The EQU 16320 must stay the same, this is the PRINT@960 position on the screen.

The EQU 4020 is the current cursor position.

The EQU 002B is the same as the BASIC command INKEY$

The EQU 14312 is the Printer address (37E8H)

The EQU 0049 is the same as 002B but waits for a key.

Lines 250-380 contain storage areas. Leave as they are. Make sure all the DEFB's & DEFW's are correct when you type it in.

All of the the menu commands A-Z.

I.E. COMA = command A, COMB = Command B . . . COMZ = Command Z COMBRK =

CUP = cursor up, CDOWN = cursor down, CLEFT = cursor left and CRIGHT = cursor right.

The easiest commands to change are those with filenames. E.G. COMA is DISASSEM/CMD. See line 2320. If you want to change this to E.G. DISKDUMP/CMD then replace line 2320 with the following:

2320 SA DEFM 'DISKDUMP'

Note: the /CMD is optional, so save space and leave it out.

To replace this with E.G. PRINTSET/BAS replace line 2320 with the following:

2320 SA DEFM 'BASIC RUN ''PRINTSET/BAS'' '

Note: the way this is executed is how NEWDOS80 wants it to be executed. DOSPLUS users E.G. have to use the following:

2320 SA DEFM 'BASIC PRINTSET/BAS-F:3'

Note: 3 file areas -F:3 is not necessary, change to suit program.

Changing commands such as COMB is fairly easy. For DOSes without the BOOT command, change line 2240 to the following:

2240 HALT

Delete 2250-2260 & delete 2340-2350.

**NOTE: Any changes to COMmands need changing on the menu page as well! (Thought I'd remind you!)**

Some COMmands are difficult to change. Such as COMC.

Line 4650 contains the COPY Buffer which is the following:

COPY FILESPEC/EXT:X :Y

You may need to change this to suit the COPY command of your own DOS.

ALSO!!!! You have to change some of the code as well!!!!

See line 5450, this loads BC with 5 which is added to the register pointing to the COPY Buffer. This points to the F in FILESPEC. (Count the letters! C of COPY + 5 is OPY space F — thats 5 isn't it!)

You will have to make similar modifications to other COMmands elsewhere in the program.

**WARNING!!! Changing the COMmands COMC, COME, COMK, and COML among others, should only be attempted by experienced A/L programmers!**

**Some more things you should know**

ADIR has sound effects! (Well ... beeps actually!) Every keystroke is accompanied by a BEEP or a B-BEEP!

Line 9780 must be changed if you change the ORG address.

HIMEM,xxxx should equal ORG xxxx.

HIMEM is a NEWDOS80 command which sets the MEMORY SIZE. All NEWDOS80 LIBrary commands respect HIMEM except for LOAD. You can change the flash rate of the cursor by altering the value of BC in line 9690.

For DOSPLUS 3.4 users, you should change any DIR message to CAT. You will also have to check the syntax of other commands. E.G. FORMAT ... FORMAT, 1 should be changed to FORMAT :1 NEWDOS 2.1 or TRSDOS users will have to make similar modifications.

When you type in the program, try and keep the line count up. Instead of entering ';' remarks, press ENTER instead.

If the program you have typed in matches the listing in the book line-for-line then it is easier to DEBUG if you type in some errors.

Comments are included in the listing on most lines. The program was assembled on the standard TRS-80 EDITOR ASSEMBLER (modified for disk use & included with NEWDOS80).

NEWDOS80 Version 2.0 users can type the program in as-is and should not have any problems.

NEWDOS80 Version 2.0 has four filespecs across the screen at a time with the DIR LIBrary command. Some DOSes, like almost all but NEWDOS80 Version 2.0 have three filespecs across the screen. You will have to modify the CLEFT & CRIGHT subroutines in the program. (Hint: the increment at present is 15 spaces!)

**WARNING! It is a good idea to read all of this first and carefully examine the program before actually typing anything in. Don't say I didn't warn you!!!**

## AMATEUR RADIO LOG BOOK (L2/16K)

**an adaption by R.J. Stehr**

**Introduction**

Since I first started thinking seriously about Micro-Computers I have been interested in finding a way of storing Amateur Radio Log Book type information on tape. The first obstacle was the lack of suitable software and the second was my lack of ability to write such a program.

The only way I could see of overcoming both problems was to adopt an existing program to perform the task. Accordingly I experimented with a number of programs published by various magazines before I arrived at the MICRO-80 Household Budget program — available on the free software cassette. This program was the basis on which I constructed the one I am about to describe, so no-one has any excuse to claim they don't know what I'm talking about.

**Development**

Most subscribers should be sufficiently au fait with the original program to know roughly which routines it contains, so I am not going into that now. Sufficient to say that about half was scrapped and the other half was modified. The original menu was retained with options 7 & 9 removed. The original 8 then became option 7. The selection of number one in the main menu now gives the headings:

**CALL TIME DATE RST/S RST/R MHZ MODE**

The significance of the layout becomes apparent when one considers the information required during a contest. The spacing is arranged so that if all recorded information has the greatest number of characters normally encountered there will be 2 clear spaces between each column. The following example will demonstrate:

VK2ABC 0130 23JUN81 599006 144.150 RTTY

It is important to note that the callsign should always consist of 6 characters otherwise the search routine will fail to locate the entry you seek. Shorter callsigns should be built up using periods (.) added to the end (e.g. A4TC ...). To escape back to the main menu type and enter 'EXIT'.

Options 2 to 5 are adequately covered in the instructions incorporated in the program. Number 6-Log Book Extract; has its own submenu. I will give a hard copy of the memory provided a line printer is attached. Accidental selection of this option will cause the program to hang up if there is no line printer. 2 will search for and list, on the monitor, a selected callsign and all other information recorded for that entry or entries. The user also has the option of having hard copy made of that information if he wishes.

Option 3 will return you to the main menu.

An examination of the program listing will reveal that there are apparently superfluous lines left in it from the original program. This is quite correct — but if removed will cause the program to hang up. This is one for the smart programmers to rectify. After all I didn't say it was a super hot program, I only said it works the way it was intended to.

This version occupies about 5K memory and requires another 1.5K to manoeuvre in. In a 16K machine this leaves about 9K for the buffer. It is normally adequate for 175 entries although it will put you right on the limit. If you have any qualms then limit each dump to 150 entries.

**Operation**

I have a copy of the program on each side of a new tape starting at 010 on the counter. I commence the first dump at 040 and leave a space of 10 on the counter between each complete batch of 150 entries. The start point for each can then be logged (on the label of the cassette) for future reference. To add to an incomplete dump (less than 150 entries) load the data from the cassette into memory. The '80 will switch the cassette of at the appropriate point when the load is complete. Press 'RESET' to clear the buffer. Run the program and select option 1-input from the keyboard, enter the additional data and dump onto tape, making sure that the total does not exceed 150 entries. The new batch will then become an integral part of the old.

Well folks there you have it; A computer based Log Book system with a 9K buffer and a search routine. Now then, let's hear the clicking of keys as busy fingers make up for the time you've wasted waiting for someone to come up with this type of program.

## *** ALIEN CHASE ***
## HITACHI PEACH

```
10 REM ALIEN CHASE BY D.C. KELLY,20 RUTH
 ST. CORINDA,BRISBANE,4075
20 S$=CHR$(92):E$=CHR$(35):SCREEN 0:WIDT
H40:INPUT"Do you want directions(Y,N)";D
R$:IFDR$="Y"THEN320
30 INPUT"NUMBER OF ALIENS (MAX=10)";A:WI
DTH40:A$="."+CHR$(254)+CHR$(254)+CHR$(25
4)+CHR$(254)+CHR$(254)+CHR$(254)+CHR$(25
4)
40 EX(2)=32:EY(3)=21:EY(4)=21:EX(4)=36
50 X=20:Y=9:FORI=0TO20STEP2
60 FORJ=1TO5
70 PRINTA$;
80 NEXTJ:FORQ=0TO39:PRINT".";:NEXTQ
90 NEXT I:LOCATE0,23:PRINT"SCORE=":LOCAT
E0,22:PRINT"PRESS 'R' FOR A NEW SCREEN":
GOTO120
100 IFK$="R"THENCLS:GOTO40ELSEH=ASC(K$):
X1=0:Y1=0:IFH=28THENX1=1ELSEIFH=29THENX1
=-1ELSEIFH=31THENY1=1ELSEIFH=30THENY1=-1
110 RETURN
120 X$=INKEY$:IFK$<>""THEN GOSUB 100
130 X2=X:Y2=Y:X2=X2+X1:Y2=Y2+Y1
140 IFX2>39THENX2=39ELSEIFX2<0THENX2=0
150 IFY2>21THENY2=21ELSEIFY2<0THENY2=0
160 LOCATEX,Y:PRINT" ":IF SCREEN(X2,Y2)<
>254THENX=X2:Y=Y2
170 IF SCREEN(X,Y)=46THENSC=SC+1
180 LOCATEX,Y:PRINTS$:LOCATE9,23:PRINTSC
190 FORI=1TOA:EX1=0:EY1=0:IF(RND)>.9THEN
 210
200 IFEX(I)>(X)THENEX1=-1ELSEIFEX(I)<(X)
THENEX1=1
210 IFEY(I)>(Y)THENEY1=-1ELSEIFEY(I)<(Y)
THENEY1=1
220 LOCATEEX(I),EY(I):PRINT" "
230 IFSCREEN(EX(I)+EX1,EY(I))<>254THENEX
(I)=EX(I)+EX1 ELSEEX1=0
240 IFSCREEN(EX(I),EY(I)+EY1)<>254THENEY
(I)=EY(I)+EY1 ELSEEY1=0
250 IF SCREEN(EX(I),EY(I))=35THENEX(I)=E
X(I)-EX1:EY(I)=EY(I)-EY1
260 IF SCREEN(EX(I),EY(I))=92THENLOCATE0
,22:BEEP(1):PRINT"DESTROYED  INS=PLAY AG
AIN  DEL=FINISH":GOTO290
270 LOCATEEX(I),EY(I):PRINTE$
280 NEXTI:GOTO120
290 K$=INKEY$:IFK$=""THEN290ELSEIFASC(K$
)=18THENCLS:RUN
300 IF ASC(K$)=8THENCLS:END
310 GOTO290
320 PRINT:PRINT"You control a (";S$;").M
arauding aliens (";E$;") will try to des
troy you by ramming.":PRINT"You get one
point for every(.) you      destroy.When
 you have destoyed all of   them,press '
R' for a new screen."
330 PRINT"You control your ship with the
 cursor  control keys.You cannot go thr
ough (";CHR$(254);")":PRINT:GOTO30
```

## **** CRICKET ****

COLOUR COMPUTER

```
100 PMODE3,1:SCREEN1,1:PCLS:POKE
65495,0
110 DRAW"BM104,92R6L6D7R6":DRAW"
BM115,92R6D3L6U3D7U4R1F4":DRAW"B
M125,92R3L1D7L3R4":DRAW"BM134,92
R5L7D7R6":DRAW"BM142,92D7U4R2E4G
4F4":DRAW"BM158,92L6D3R6L6D4R6":
DRAW"BM163,92R7L3D7"
120 FORX=50TO90:CIRCLE(138,92),X
,6,1,1:NEXTX
130 SCREEN1,0:FORX=0TO1:PLAY"V20
T303L250.L3GO4DP4L9.CO3BAO4L3GL5
DP5L9.CO3BAO4L3GL5DL9.CO3BO4CL30
3AP5":NEXTX:SCREEN1,1:FORX=0TO99
9:NEXTX
140 CLS:PRINT"+++++++++++ CRICKE
T ++++++++++++"
150 PRINT" THIS GAME IS FOR TWO
PLAYERS.  THE BOWLER LINES UP HI
S BALL BY USING THE RIGHT AND LE
FT ARROW  KEYS. TO BOWL, PRESS <
B>. WHEN  YOU DO THIS THE BATSMA
N WILL    APPEAR. HE USES <1> TO
 GO LEFT  AND <2> TO GO RIGHT."
160 PRINT"THE BATSMAN MUST GET H
IS BAT IN FRONT OF THE BALL TO H
IT IT."
170 M$="    HIT ENTER    "
180 M$=RIGHT$(M$,13)+LEFT$(M$,1)
:FORH=1TO50:NEXT:PRINT@392,M$
190 K$=INKEY$:IFK$=""THEN180ELSE
IFASC(K$)=13THEN200ELSE180
200 CLS:PRINT"+++++++++++ CRICKE
T ++++++++++++":PRINT"IF THE BAL
L HITS THE OUTSIDE    FENCE THE
BATSMAN GETS A 6. IF  IT GOES BE
TWEEN THE OUTSIDE AND THE MIDDLE
 BOUNDRY FENCES HE    GETS A 4.
AND IF IT GOES BETWEENTHE FIRST
BOUNDRY FENCE AND THE"
210 PRINT"SECOND, THE BATSMAN GE
TS 2 RUNS."
220 M$="    HIT ENTER    "
230 M$=RIGHT$(M$,13)+LEFT$(M$,1)
:FORH=1TO50:NEXT:PRINT@328,M$;
240 K$=INKEY$:IFK$=""THEN230ELSE
IFASC(K$)=13THEN250ELSE230
250 PMODE3,1:SCREEN1,0:PCLS:COLO
R2,1
260 LINE(0,0)-(255,191),PSET,B:L
INE(25,23)-(230,168),PSET,B:LINE
(50,46)-(205,145),PSET,B
270 COLOR4,1:DRAW"BM124,49D15U15
R6D15U15R6D15":DRAW"BM124,128D15
U15R6D15U15R6D15"
280 COLOR3,1:LINE(52,3)-(67,3),P
SET:LINE(188,3)-(203,3),PSET:LIN
E(84,39)-(100,39),PSET:LINE(155,
39)-(172,39),PSET:LINE(38,91)-(3
8,107),PSET:LINE(217,91)-(217,10
7),PSET:LINE(11,152)-(11,167),PS
ET:LINE(244,152)-(244,167),PSET
290 LINE(120,44)-(140,44),PSET:L
INE(104,46)-(152,46),PRESET:LINE
```

```
(104,23)-(152,23),PRESET:COLOR2,
1:LINE(104,46)-(104,0),PSET:LINE
(152,46)-(152,0),PSET:LINE(104,0
)-(152,0),PRESET
300 X=RND(148):IFX<112THEN300
310 PSET(X,125,3):FORG=0TO5:NEXT
:PRESET(X,125)
320 IFPEEK(344)=247THENX=X+1
330 IFPEEK(340)=254THEN370
340 IFPEEK(343)=247THENX=X-1
350 IFX<112THENX=112ELSEIFX>148T
HENX=148
360 GOTO310
370 SOUND100,1:Y=126:I=70
380 O=RND(140):IFO<120THEN380
390 PSET(X,Y-1,3):PSET(X,Y,1)
400 Y=Y-1
410 IFPPOINT(X,Y-2)=3GOTO480
420 IFPPOINT(X,Y-2)=4GOTO490
430 IFY=10GOTO500
440 IFPPOINT(X,Y-2)=2GOTO510
450 PSET(O,I,2):IFPEEK(339)=239G
OSUB520
460 IFPEEK(340)=239GOSUB530
470 GOTO390
480 SOUND50,10:GOSUB1290:GOTO250

490 CLS4:PRINT@237,"BOWLED";:SOU
ND1,20:OU=OU+1:CLS:PRINT:PRINTOU
"OUT FROM 10 PLAYERS.":PRINTSC"R
UNS MADE.":SOUND125,50:IFOU=10TH
EN860ELSE250
500 SOUND10,10:SC=SC+4:GOSUB1300
:GOTO250
510 SOUND190,1:GOTO540
520 IFO<120THENRETURNELSEO=O-1:P
RESET(O+1,I):RETURN
530 IFO>140THENRETURNELSEO=O+1:P
RESET(O-1,I):RETURN
540 PRESET(O,I):W=RND(6):IFW=1OR
W=5THEN580
550 IFW=2ORW=6THEN720
560 IFW=3THEN970
570 IFW=4THEN1130
580 COLOR3,1:F=RND(15)
590 FORG=1TOF
600 PSET(X,Y):FORK=0TO10:NEXT:PR
ESET(X,Y)
610 IFPPOINT(X+1,Y)=3ORPPOINT(X,
Y-1)=3ORPPOINT(X+1,Y-1)=3THEN131
0
620 X=X-RND(15):Y=Y+RND(15)
630 IFY>191ORY=191THENY=191:PSET
(X,Y):SC=SC+6:GOTO660
640 IFX<0ORX=0THENX=0:PSET(X,Y):
SC=SC+6:GOTO660
650 NEXTG:PSET(X,Y)
660 IFX<50ANDX>25ANDY<145THENSC=
SC+2
670 IFX>25ANDY<168ANDY>145THENSC
=SC+2
680 IFX<25ANDX>0ANDY<168THENSC=S
C+4
690 IFY>168ANDY<191THENSC=SC+4
700 IFX=50ORY=145THENSC=SC+2
710 FORL=0TO500:NEXT:CLS:PRINT:P
RINTOU"OUT FROM 10 PLAYERS.":PRI
NTSC"RUNS MADE.":FORL=0TO999:NEX
T:GOTO250
720 COLOR3,1:F=RND(15)
730 FORG=1TOF
740 PSET(X,Y):FORK=0TO10:NEXT:PR
ESET(X,Y)
750 IFPPOINT(X-1,Y)=3ORPPOINT(X,
Y-1)=3ORPPOINT(X-1,Y-1)=3THEN131
0
760 X=X+RND(15):Y=Y+RND(15)
770 IFX>255ORX=255THENX=255:SC=S
C+6:PSET(X,Y):GOTO850
780 IFY>191ORY=191THENY=191:SC=S
C+6:PSET(X,Y):GOTO850
790 NEXTG:PSET(X,Y)
800 IFX>205ANDX<228ANDY<145THENS
C=SC+2
810 IFX<230ANDY<168ANDY>145THENS
C=SC+2
820 IFX>230ANDX<255ANDY<168THENS
C=SC+4
830 IFY>168ANDY<191THENSC=SC+4
840 IFX=230ORY=168THENSC=SC+2
850 FORL=0TO500:NEXT:CLS:PRINT:P
RINTOU"OUT FROM 10 PLAYERS.":PRI
NTSC"RUNS MADE.":FORL=0TO999:NEX
T:GOTO250
860 CLS:PRINT:PRINT:PRINT"ALL OU
T FOR"SC:PRINT:PRINT"ANOTHER GAM
E (Y/N)?"
870 PLAY"V30O1L20A-A1A-A1A-A1"
880 I$=INKEY$:IFI$=""THEN880
890 IFI$="Y"THENRUN
900 IFI$="N"THEN920
910 GOTO880
920 CLS:PRINT:PRINT:PRINT"DO YOU
 WANT A LISTING OF THE    PROGRA
M (Y/N)?"
930 I$=INKEY$:IFI$=""THEN930
940 IFI$="Y"THENCLS:POKE65494,0:
LIST
950 IFI$="N"THENCLS:POKE65494,0:
END
960 GOTO930
970 COLOR3,1:F=RND(15)
980 FORG=1TOF
990 PSET(X,Y):FORK=0TO10:NEXT:PR
ESET(X,Y)
1000 IFPPOINT(X-1,Y)=3ORPPOINT(X
,Y+1)=3ORPPOINT(X-1,Y+1)=3THEN13
10
1010 X=X+RND(9):Y=Y-RND(9)
1020 IFX>255ORX=255THENX=255:PSE
T(X,Y):SC=SC+6:GOTO1120
1030 IFY<0ORY=0THENY=0:SC=SC+6:P
SET(X,Y):GOTO1120
1040 IFPPOINT(X-1,Y)=4ORPPOINT(X
,Y+1)=4THEN490
1050 NEXTG:PSET(X,Y)
1060 IFX>205ANDX<230ANDY>46THENS
C=SC+2
1070 IFX>230ANDX<255ANDY>23THENS
C=SC+4
1080 IFY<46ANDY>23ANDX<230THENSC
=SC+2
1090 IFY>0ANDY<23ANDX<255THENSC=
SC+4
1100 IFX=230ANDY<22THENSC=SC+2
1110 IFY=23ANDX<231THENSC=SC+2
1120 FORL=0TO500:NEXT:CLS:PRINT:
PRINTOU"OUT FROM 10 PLAYERS.":PR
INTSC"RUNS MADE.":FORL=0TO999:NE
XT:GOTO250
1130 COLOR3,1:F=RND(15)
1140 FORG=1TOF
1150 PSET(X,Y):FORK=0TO10:NEXT:P
RESET(X,Y)
1160 IFPPOINT(X+1,Y)=3ORPPOINT(X
,Y+1)=3ORPPOINT(X+1,Y+1)=3THEN13
10
1170 X=X-RND(9):Y=Y-RND(9)
1180 IFX<0ORX=0THENX=0:SC=SC+6:P
SET(X,Y):GOTO1280
1190 IFY<0ORY=0THENY=0:SC=SC+6:P
SET(X,Y):GOTO1280
1200 IFPPOINT(X+1,Y)=4ORPPOINT(X
,Y+1)=4THEN490
1210 NEXTG:PSET(X,Y)
1220 IFX<50ANDX>25ANDY>46THENSC=
SC+2
1230 IFX>25ANDY<46ANDY>23THENSC=
SC+2
1240 IFX<25ANDX>0ANDY>23THENSC=S
C+4
1250 IFX>0ANDY>0ANDY<23THENSC=SC
+4
1260 IFX=25ANDY<22THENSC=SC+2
1270 IFY=23ANDX>24THENSC=SC+2
1280 FORL=0TO500:NEXT:CLS:PRINT:
PRINTOU"OUT FROM 10 PLAYERS.":PR
INTSC"RUNS MADE.":FORL=0TO999:NE
XT:GOTO250
1290 SC=SC+1:CLS:PRINT:PRINT:PRI
NT" WIDE - 1 RUN.":PRINTOU"OUT F
ROM 10 PLAYERS.":PRINTSC"RUNS MA
DE.":FORL=0TO1500:NEXT:RETURN
1300 CLS:PRINT:PRINT:PRINT" BYE
- 4 RUNS.":PRINTOU"OUT FROM 10 P
LAYERS.":PRINTSC"RUNS MADE.":FOR
L=0TO1500:NEXT:RETURN
1310 CLS4:PRINT@237,"CAUGHT";:SO
UND35,30:OU=OU+1:CLS:PRINT:PRINT
:PRINTOU"OUT FROM 10 PLAYERS.":P
RINTSC"RUNS MADE.":SOUND125,50:I
FOU=10THEN860ELSE250
```

## SALE OF SECOND HAND AND SHOP SOILED ITEMS AND SOFTWARE

### PRINTERS

| | |
|---|---|
| COMPRINT (Model 912) Serial Port and Manual included, Fast printer output at 190 characters per second (140 full lines per minute Uses Aluminised paper - 1 large roll included) | $199.00 |
| STAR PRINTER DP8480 80 CPS C01 Dot Matrix printer lower case no descenders Centronics port (Demo model as new) | $275.00 |
| OLIVETTI Dot Matrix printer (near new demo model) 100 characters per second (same as Centronics 730) | $350.00 |
| TANDY DMP 100 Line Printer | $350.00 |
| GP80 DICK SMITH Printer | $125.00 |
| QUICK PRINTER I | $40.00 |
| QUICK PRINTER II | $50.00 |
| CENTRONICS MICRO PRINTER | $50.00 |

### COMPUTERS

| | |
|---|---|
| TANDY TRS-80 MODEL III Level 2 16K | $599.00 |
| HITACHI PEACH 32K single Disk Drive system | $1,125.00 |
| SYSTEM 80 16K Mk II with manuals (VU meter) | $300.00 |

### OTHER ITEMS

| | |
|---|---|
| ESF Stringy Floppy high speed tape storage unit | $165.00 |
| External Power Supply for Tandy Keyboard or Exp. Interface | $ 20.00 |
| Black and White 12" Monitor tube | $ 20.00 |
| NEC PC8000 Expansion Interface | $ 95.00 |
| Micro-Processor Development Kit F8 (3780) | $ 95.00 |
| MT 32 (not working) Memory Exp. with Centronics printer interface For TRS-80 Model I | $ 25.00 |
| TRS-80 VOICE SYNTHESISER | $250.00 |
| ZX81 SINCLAIR (UK Model) | $ 50.00 |

### SOFTWARE

| | |
|---|---|
| GENERAL LEDGER (Tandy Program Package) | $ 75.00 |
| PILOT (Schoolteachers programming language) | $ 75.00 |
| NEWDOS 80 VERS. I (Manual only no cover or Disk) | $ 25.00 |
| TRS-80 Monitors | $100.00 |
| CTR 57 Cassette and lead | $ 30.00 |
| Radio Shack TRS-80 Graphics for Model I and Model III (Book) | $ 4.00 |

### ODDMENTS

Disk Library Containers (hold 10 disks) $3.50 and $3.00 each
Oddments in Tapes C.10's 50c, C.30's 60c and C.60's 70c each, Tape Boxes 10 for 50c
October 1982 Micro-80 Magazine (6 only left) $1.60 each

**NOTE:** Prices quoted for Secondhand or Demo Printers, Computers, Hardware or Software do not include cost of postage and packing. Please allow extra according to the item you are ordering.

## SOFTWARE MART

The sale of secondhand Software last month was so successful we are now interested in buying more as we have several outstanding orders especially VISICALC. Anyone wishing to sell software, please contact our Order Department. We require complete Manuals in clean condition with the original Disk/s or tapes

## MAGAZINE CLEARANCE

We need the Warehouse space so we are clearing out back issues of MICRO-80 Magazines

Any 12 Issues only $17.00 including postage and packing

Each issue contains at least 6 programs which are as relevant today as the day they were published. This is a great opportunity to stock up on your favourite magazine at substantial saving. See Nov/Dec issue for a list of copies still available.

## BRAND NEW EPSON COMPATIBLE PRINTERS

Only $475.00. plus $10.00 freight - 80 column 80 CPS Dot Matrix Printer with friction and tractor feeds, Bit Graphics and Epson Control codes.

## EPSON RX-80 PRINTERS

2 Only left - only $475. each plus $10. for freight
Brand New 100 cos bi-directional Dot Matrix printer
Adjustable tractor feed. Full bit-graphics capability
plus underlining and italic type faces.

## NEW DISCONTINUED SOFTWARE SELLOUT

For System 80 or TRS-80 - Tapes only

Killer Beetles/Jungle Raiders 2 for $35.00
postage included or $18.00 each

Alien Taxi, Devils Tower, Desert Peril or Outland 2 for $45.00
postage included or $23.00 each

For Apple II

Microsoft Adventure (tape and disk) $18.00. each postage included

Microsoft Typing Tutor (tape only) $25.00 each postage included.

NOTE: Minimum Bankcard Debit $10.00.

Orders will be dealt with in order of receipt where only one item available.

**** (LII/4K) Nightmare Park ****

TRS-80/SYSTEM-80

```
20 REM FROM L.HIGGS - 26, WINDSOR GROVE, WORDSLEY, STOURBRIDGE,
WEST MIDLANDS, DY8 5AQ, ENGLAND.
30 CLS:PRINT@463,"ABANDON HOPE ALL YE WHO ENTER .....";:GOSUB300
00
80 CLEAR 100
100 CLS:RANDOM
102 IFSC=10GOTO35000
105 GOSUB31000:GOSUB32000
120 PRINT@471,"NIGHTMARE PARK.";:PRINT@729,"SCORE = ";SC;:GOSUB3
0000:CLS:TR=RND(6):ONTR GOTO 5000,9000,11000,13000,15000,17000
5000 REM MAD MATHEM
5010 CLS:PRINT"THE MAD MATHEMATICIAN!
ANSWER THE FOLLOWING QUESTION WITHIN 10 SECONDS OR DIE!":GOSUB30
000
5020 R=RND(100):S=RND(200):A=R+S:IFA<100GOTO5020
5030 PRINT@472,R;" + ";S;" = ?";
5035 FOR T=1 TO 1100:A$=INKEY$
5050 IFA$<>""GOTO5060
5055 NEXT:GOTO28000
5060 FOR T=1 TO 800:B$=INKEY$
5070 IF B$<>""GOTO5080
5072 NEXT:GOTO28000
5080 D$=INKEY$:IFD$=""GOTO5080
5084 C$=A$+B$+D$:C=VAL(C$):PRINT"      ";A;:GOSUB30000:IFINT(C)<>
INT(A)GOTO28000
5100 PRINT:PRINT"CORRECT!":GOSUB30000:SC=SC+1:GOTO100
9000 REM CRUSHER
9005 X=64:CLS:PRINT"CRUSHER!
ONLY ONE LETTER WILL STOP IT!":GOSUB30000:CLS:POKE16352,88:R=RND
(26)+64
9040 A$=INKEY$:IFA$=""GOTO 9040
9041 IFASC(A$)=R GOTO9100
9060 FORS=X TO X+63:PRINT@S,CHR$(191);:PRINT@S-64,CHR$(32);:NEXT
 S:X=X+64:IFPEEK(16352)<>88 GOTO 9110ELSE GOTO 9040
9100 CLS:PRINT"LUCKY!":GOSUB30000:SC=SC+1:GOTO100
9110 CLS:PRINT"CRUSHED! THE LETTER WAS ";CHR$(R);"!":GOSUB30000:
GOTO28000
11000 REM MEMORY TESTER
11010 FORR=1TO7:R(R)=RND(9):NEXT:CLS:PRINT"MEMORY TESTER :
MEMORISE THE FOLLOWING NUMBER .......":GOSUB30000:PRINT@600,"
 ";:FORR=1TO7:PRINTR(R);:NEXT:FORR=1TO500:NEXT:PRINT@600,"
                    ";:PRINT@600," ";
11070 FOR R=1 TO 7
11080 A$=INKEY$:IF A$=""GOTO 11080
11085 PRINT R(R);:IF VAL(A$)<>R(R)GOSUB30000:GOTO28000
11110 NEXT:PRINT"
CORRECT!":GOSUB30000:SC=SC+1:GOTO 100
13000 REM HAIL OF BARBS
13010 CLS:PRINT"HAIL OF BARBS :
KEEP STILL AND HOPE THEY MISS ....":GOSUB30000:CLS:PRINT@480,"X"
;:GOSUB30000
13020 FORV=1 TO400:A=RND(1000)+15360:POKE A,191:T=PEEK(15360+480
):IF T<>88 GOSUB30000:GOTO 28000: ELSE NEXT
13030 GOSUB30000:CLS:PRINT"SAFE!";:SC=SC+1:GOSUB30000:GOTO100
15000 REM GORRILLA
15005 DATA"ALFRED","ARTHUR","FREDERICK","PERCIVAL","LANCELOT"
15010 CLS:PRINT"THE EGOTISTICAL GORILLA :
TELL HIM HIS NAME OR BE MAULED TO DEATH !
(
HIS NAME WILL BE REVEALED IN A FLASH OF LIGHTNING .....) ":GOSUB
30000:GOSUB30000:GOSUB30000:X=RND(50)+512
15020 R=RND(5):FORT=1TOR:READN$:NEXT:RESTORE:PRINT@X,N$;:FORN=1T
O50:NEXT:PRINT@X,"                    ";:CLS:INPUT"WHAT IS HIS NAME
 ";T$:GOSUB30000:IFT$<>N$PRINT"NO! IT WAS ";N$;"!":GOSUB30000:GO
TO28000
15030 CLS:PRINT"CORRECT!":GOSUB30000:SC=SC+1:GOTO100
17000 REM LION AND DOORS
17010 CLS:PRINT"THE THREE DOORS!
BEHIND ONE IS A STARVING LION.":GOSUB30000:A$=CHR$(191):B$=A$+A$
+A$+A$+A$+A$+A$+A$
17040 FOR X=329 TO 649 STEP 64:PRINT@X,B$;:NEXT
17070 FORX=346TO666STEP64:PRINT@X,B$;:NEXT
17080 FORX=363TO683STEP64:PRINT@X,B$;:NEXT
17082 PRINT@204,"1";:PRINT@221,"2";:PRINT@238,"3";
17090 PRINT@832,"THROUGH WHICH DOOR DO YOU WISH TO WALK ?";
17100 E$=INKEY$:IF E$="" GOTO 17100
17105 IF VAL(E$)>3 OR VAL(E$)<1 GOTO 17100
17110 PRINT " ";E$:R=RND(3):GOSUB30000:B$="          "
17180 FORX=329TO649STEP64:PRINT@X,B$;:NEXT
17190 IF R=1 PRINT@586,"LION!";
17195 GOSUB30000
17200 FORX=346TO666STEP64:PRINT@X,B$;:NEXT
17210 IF R=2 PRINT@604,"LION!";
17215 GOSUB30000
17220 FORX=363TO683STEP64:PRINT@X,B$;:NEXT
17230 IF R=3 PRINT@576+45,"LION!";
17235 GOSUB30000
17240 IF VAL(E$)=R GOTO 28000
17245 CLS:PRINT"SAFE!":GOSUB30000:SC=SC+1:GOTO100
28000 REM END
28003 CLS
28010 GOSUB 32000
28020 GOSUB32000:PRINT@266,"NIGHTMARE PARK CLAIMS ANOTHER VICTIM
.":PRINT@728,"SCORE = ";SC;:GOSUB31000
28030 PRINT@728,"SCORE = ";SC;:GOSUB31000
28040 H$=INKEY$:IFH$=""GOTO28040
28045 GOTO 80
30000 FORB=1TO1000:NEXT:RETURN
31000 FORW=1TO4:W$=INKEY$:NEXT:RETURN
32000 PRINT@64,STRING$(64,"*");:PRINT@896,STRING$(64,"*");:RETUR
N
35000 CLS:GOSUB32000:PRINT@150,"CONGRATULATIONS!";:PRINT@455,"YO
U HAVE SUCCEEDED IN LEAVING NIGHTMARE PARK.":GOTO28030
```

**** (LII/16K) Amateur Radio Log Book ****

TRS-80/SYSTEM-80

```
5 '          **  R.J. STEHR  **
10 '          69 LOCKHEED ST.,
15 '         GARBUTT,TOWNSVILLE
20 '         QUEENSLAND     4814
```

```
25 CLS
30 FORX=0TO127:SET(X,3):SET(X,44):NEXT
35 FORY=0TO47:SET(6,Y):SET(7,Y):SET(120,Y):SET(121,Y):NEXT
40 FORY=14TO18:SET(13,Y):SET(17,Y):NEXT:SET(14,13):SET(14,16):SE
T(15,12):SET(15,16):SET(16,13):SET(16,16)
45 FORY=12TO18:SET(20,Y):SET(24,Y):NEXT:SET(21,13):SET(22,14):SE
T(23,13)
50 FORY=14TO18:SET(27,Y):SET(31,Y):NEXT:SET(28,13):SET(28,16):SE
T(29,12):SET(29,16):SET(30,13):SET(30,16)
55 FORY=13TO18:SET(36,Y):NEXT:FORX=34TO38:SET(X,12):NEXT
60 FORY=12TO18:SET(41,Y):NEXT:FORX=42TO45:SET(X,12):SET(X,18):NE
XT:FORX=42TO44:SET(X,16):NEXT
65 FORY=12TO17:SET(48,Y):SET(52,Y):NEXT:FORX=49TO51:SET(X,18):NE
XT
70 FORY=12TO18:SET(55,Y):NEXT:SET(56,12):SET(56,16):SET(57,12):S
ET(57,16):SET(58,13):SET(58,15):SET(58,17):SET(59,14):SET(59,18)
75 FORY=12TO18:SET(70,Y):NEXT:SET(71,12):SET(71,16):SET(72,12):S
ET(72,16):SET(73,13):SET(73,15):SET(73,17):SET(74,14):SET(74,18)
80 FORY=14TO18:SET(77,Y):SET(81,Y):NEXT:SET(78,13):SET(78,16):SE
T(79,12):SET(79,16):SET(80,13):SET(80,16)
85 FORY=12TO18:SET(84,Y):NEXT:SET(85,12):SET(85,18):SET(86,12):S
ET(86,18):SET(87,13):SET(87,17):SET(88,14):SET(88,15):SET(88,16)
90 FORY=12TO18:SET(91,Y):NEXT
95 FORY=13TO17:SET(94,Y):SET(98,Y):NEXT:FORX=95TO97:SET(X,12):SE
T(X,18):NEXT
100 FORY=24TO30:SET(61,Y):NEXT:FORX=62TO65:SET(X,30):NEXT
105 FORY=25TO29:SET(68,Y):SET(72,Y):NEXT:FORX=69TO71:SET(X,24):S
ET(X,30):NEXT
110 FORY=25TO29:SET(75,Y):NEXT:SET(76,24):SET(76,30):SET(77,24):
SET(77,30):SET(78,24):SET(78,28):SET(78,30):SET(79,25):SET(79,28
):SET(79,29)
115 FORY=24TO30:SET(89,Y):NEXT:SET(90,24):SET(90,27):SET(90,30):
SET(91,24):SET(91,27):SET(91,30):SET(92,24):SET(92,27):SET(92,30
):SET(93,25):SET(93,26):SET(93,28):SET(93,29)
120 FORY=25TO29:SET(96,Y):SET(100,Y):NEXT:FORX=97TO99:SET(X,24):
SET(X,30):NEXT
125 FORY=25TO29:SET(103,Y):SET(107,Y):NEXT:FORX=104TO106:SET(X,2
4):SET(X,30):NEXT
130 FORY=24TO30:SET(110,Y):NEXT:SET(111,27):SET(112,26):SET(112,
28):SET(113,25):SET(113,29):SET(114,24):SET(114,30)
135 PRINT@877,"BY R.J. STEHR";
140 FORX=1TO2000:NEXT
145 CLS:PRINT@803,"PLAGIARIZED FROM THE MICRO-80";
150 PRINT@867,"HOUSEHOLD ACCOUNTS PROGRAM !!";
155 PRINT@937,"ORIGINAL GRAPHICS";
160 PRINT@1003,"BY R.J.STEHR";
165 FORX=1TO1500:NEXT
175 CLS:CLEAR 9000:DEFDBLL:DEFSTRA:DEFINTI,J,X:DIMA(175)
180 F1$="CALL  ":F2$="CALL  "
185 F3$="  ":F4$="  "
190 PRINT"                    * * * M E N U * * *"
195 PRINT"* 1 *  KEYBOARD INPUT","* 5 *  SAVE ON CASSETTE"
200 PRINT"* 2 *  CASSETTE INPUT","* 6 *  PRINT LOG BOOK"
205 PRINT"* 3 *  READ MEMORY","* 7 *  LINEPRINTER UTILITY"
210 PRINT"* 4 *  EDIT MEMORY"
215 X$="":X$=INKEY$:X=VAL(X$):IFX$=""THEN215
220 ON X GOTO225,280,315,350,380,430,665
225 CLS:PRINT"  CALL.    TIME  DATE     RST/S   RST/R   MHZ
MODE"
230 FORI=1TO175
235 IFA(I)<>""THEN265
240 A="":INPUT A:IF LEN(A)>62THEN255
245 IFA="EXIT"THEN275
250 GOTO260
255 PRINT"ERROR...ENTRY EXCEEDS MAXIMUM LENGTH":GOTO240
260 A(I)=A
265 NEXT
270 I=I-4
275 CLS:PRINT"END OF BATCH...MEMORY CONTAINS ";I;" RECORDS":II=I
:GOTO190
280 INPUT"HOW MANY RECORDS ARE THERE ON CASSETTE ";II
285 X$="":INPUT"PRESS <ENTER> WHEN READY TO LOAD DATA ";X$
290 FOR I=1TOIISTEP4
295 INPUT#-1,A(I),A(I+1),A(I+2),A(I+3)
300 PRINTA(I):PRINTA(I+1):PRINTA(I+2):PRINTA(I+3)
305 NEXT
310 CLS:PRINT"INPUT FROM CASSETTE COMPLETE":GOTO190
315 CLS
320 PRINT"CONTENTS OF MEMORY"
325 FOR I=1TO175
330 PRINT"<";I;">":PRINT A(I):IFA(I)=""THEN345
335 IFI=80RI=160RI=240RI=320RI=400RI=480RI=560RI=640RI=720RI=800
RI=880RI=960RI=1040RI=1120RI=1200RI=1280RI=1360RI=1440RI=1520RI=
1600RI=168THENFORT%=1TO350:NEXTT%
340 NEXTI
345 PRINT"CONTENTS OF MEMORY READ":INPUT"PRESS <ENTER> TO CONTIN
UE "; X:CLS:GOTO190
350 CLS:PRINT"MEMORY EDIT":INPUT"WHICH LINE NO DO YOU REQUIRE";I
355 PRINTSTRING$(10,92);"  CURRENT LINE UNDER REVIEW  ";STRING$(
10,92):PRINT"  ";A(I):PRINT"IF AMENDMENT REQUIRED RE-TYPE LINE..
.OTHERWISE HIT <ENTER>
HIT <ENTER> TO VIEW THE NEXT LINE IN THE BUFFER
TYPE & ENTER 'EXIT' TO RETURN TO MENU":INPUT A(I)
360 Z=0:INPUT Z$:Z=VAL(Z$)
365 IFZ$="EXIT"THENZ$="":GOTO190
370 IFZ=0THENI=I+1:GOTO355
375 IFZ<>0THENI=Z:GOTO355
380 PRINT"SAVING ON CASSETTE":INPUT"PREPARE CASSETTE...HIT <ENTE
R>";X
385 PRINT"DATA NOW BEING RECORDED ON CASSETTE...PLEASE WAIT"
390 FOR I=1TO175STEP4
395 PRINT#-1,A(I),A(I+1),A(I+2),A(I+3)
400 PRINTA(I):PRINTA(I+1):PRINTA(I+2):PRINTA(I+3)
405 IF A(I)=""THEN415
410 NEXT
415 I=I-5
420 PRINT"RECORDING COMPLETE...THERE ARE ";I;" RECORDS ON TAPE":
GOTO190
425 INPUT"<ENTER>";GO
430 PRINT:PRINT:PRINT"                    * * * LOG OPTIONS AVAILABL
E * * *"
435 PRINT"* 1 *  PRINTOUT OF MEMORY"
440 PRINT"* 2 *  LE  LOG EXTRACTS"
445 PRINT"* 3 *  RETURN TO MAIN MENU
450 X$="":X$=INKEY$:X=VAL(X$):IFX$=""THEN450
455 ON X GOTO460,495,190
460 CLS:PRINT"PRINTOUT OF MEMORY"
465 FOR I=1TO175
470 IFA(I)=""THEN485
```

```
475 PRINT"<";I;">":PRINT A(I)
480 LPRINT"<";I;">";"  ";A(I)
485 NEXT
490 PRINT"PRINTOUT COMPLETE":LPRINT"PRINTOUT COMPLETE":GOTO430
495 INPUT"IS THE LINEPRINTER REQUIRED (Y/N)";P$
500 IFP$<>"Y" AND P$<>"N" THEN495
505 INPUT"WHICH CALLSIGN DO YOU REQUIRE          ";E$
510 GOSUB625
515 FOR I=1TO175
520 IF A(I)=""THEN555
525 IF E$<>LEFT$(A(I),6) AND KA$<>MID$(A(I),40,2) THEN555
530 PRINTA(I):IFP$="N"THEN540
535 IFP$="Y"THENLPRINTA(I)
540 DA$=MID$(A(I),31,8)
545 DR$=MID$(A(I),47,8)
550 CR$=MID$(A(I),55,8)
555 NEXT
560 DG#=0:DT#=0:CT#=0:GOTO425
565 INPUT"IS THE LINEPRINTER REQUIRED (Y/N)";P$
570 IFP$<>"Y" AND P$<>"N" THEN565
575 INPUT"WHICH CALL SIGN DO YOU REQUIRE          ";C$
580 GOSUB625
585 FOR I=1TO175
590 IF A(I)=""THEN615
595 IF C$<>LEFT$(A(I),4) AND KA$<>MID$(A(I),2) THEN615
600 PRINTA(I):IFP$="N"THEN615
605 IFP$="Y"THENLPRINTA(I)
610 DR$=MID$(A(I),47,8):DR#=VAL(DR$):DT#=DT#+DR#
615 NEXT
620 DG#=0:DT#=0:CT#=0:GOTO425
625 ON X-1 GOTO645,645
630 CLS:PRINT"DATE EXTRACT     FOR (DATE)";E$:PRINT F1$
635 IF P$="Y"THENLPRINT"DATE EXTRACT     FOR (DATE)";E$:LPRINT F1
$
640 KA$="DE":GOTO660
645 CLS:PRINT"CALL EXTRACT     FOR (CALL) ";E$:PRINT F1$
650 IF P$="Y"THENLPRINT"CALL EXTRACT     FOR (CALL) ";E$:LPRINT
F1$
655 KA$="CE"
660 RETURN
665 CLS:PRINT:PRINT"LINEPRINTER UTILITY
(TYPE HEADINGS OR NOTES AS REQUIRED - TYPE 'EXIT' TO RETURN TO
THE MAIN MENU)"
670 M$="":INPUTM$:IFM$="EXIT"THEN190
675 PRINTM$:LPRINTM$
680 GOTO670
```

---

```
**** (LII/16K)   Film Costing ****    TRS-80/SYSTEM-80
10 CLEAR800:GOSUB3000:GOTO2000
15 'WRITTEN BY BRIAN J. FILLERY SEPT 1981 C SOLAR SOFTWARE
20 C$="#######.##":CLS:PRINT"
                 FILM PRODUCTION COSTS.
THIS PROGRAMME WILL PROVIDE BASIC FILM PRODUCTION COSTS FOR
VARYING SHOOTING RATIOS AND PRICES.
YOU WILL BE PROMPTED FOR EACH ENTRY AS REQUIRED.
"
25 PRINT"   LINES 1190, 1200, 1220, & 1250 CONTAIN CONSTANTS
   OF $20 & $40 WHICH CAN BE CHANGED AS REQUIRED.":GOSUB1400
30 Q$="":CLS:INPUT"NAME OF FILM                          ";N$
40 INPUT"WHAT IS TODAYS DATE (D.M.Y)      ";D$
50 INPUT"FILM RUNNING TIME (MINS.)        ";RT:L=RT*37.8
60 INPUT"SHOOTING RATIO (5 TO 1 = 5).     ";X:S=X*L/400:IFS>INT(S
)THENS=INT(S+1)
70 PRINT:PRINT"SHOOTING & WORKPRINT":INPUT"COST OF RAW FILM PER
400 FT.     ";F
80 INPUT"COST OF PROCESSING PER 400 FT.   ";P
90 INPUT"COST OF WORKPRINT PER 400 FT.    ";W:W=W/4
100 INPUT"COST OF FREIGHT PER TRIP         ";R
110 INPUT"NUMBER OF TRIPS FOR PROC/WPRINT ";T:R=R*T
115 PRINT@856,"IS DATA CORRECT SO FAR  (Y/N) ";:INPUTQ$:IFLEFT$(
Q$,1)="Y"THEN120ELSE30
120 Q$="":CLS:PRINT"RECORDING & NEG MATCHING.":INPUT"
COST OF RECORDING TAPE PER 5'' ROLL          ";SR
130 INPUT"COST OF MAGNETIC FILM PER 1200FT ROLL       ";SM
140 INPUT"COST OF TRANSFERS PER  HOUR                 ";ST
150 INPUT"COST OF SOUND MIX PER HOUR                  ";SX
160 INPUT"COST OF OPTICAL SOUND NEG/100FT.            ";SN:SN=(L+
30)*SN/100
170 INPUT"COST OF NEG MATCH PER HOUR.                 ";NM:NM=NM*
10
180 INPUT"COST OF BLACK SPACER PER 100FT.             ";NB:NB=(L+
30)*NB/100
185 PRINT@856,"IS DATA CORRECT SO FAR  (Y/N) ";:INPUTQ$:IFLEFT$(
Q$,1)="Y"THEN190ELSE120
190 Q$="":CLS:PRINT"ANSWER & RELEASE PRINT.":INPUT"COST OF  A-RO
LL PER FT.        ";AA:AA=(L+30)*AA
200 INPUT"          B-ROLL PER FT.        ";AB:AB=(L+30)*AB
210 INPUT"NUMBER OF FADES                 ";NF
220 INPUT"COST OF FADES                   ";AF:AF=AF*NF
230 INPUT"NUMBER OF DISSOLVES             ";ND
240 INPUT"COST OF DISSOLVES               ";AD:AD=ND*AD
245 PRINT"RELEASE PRINT."
250 INPUT"NUMBER OF RELEASE PRINTS        ";RP
260 INPUT"COST OF  A-ROLL PER FT.         ";RA:RA=(L+30)*RA
270 INPUT"          B-ROLL PER FT.        ";RB:RB=(L+30)*RB
280 INPUT"AMOUNT OF CONTINGENCY           ";CY
285 PRINT@856,"IS DATA CORRECT SO FAR  (Y/N) ";:INPUTQ$:IFLEFT$(
Q$,1)="Y"THEN1000ELSE190
390 '**** LPRINT ROUTINE ****
400 IFPEEK(14312)<128THEN410ELSEPRINT:PRINT"*** PRINTER NOT SWIT
CHED ON ***":GOTO1320
410 IFPEEK(14312)=127THENPRINT"*** PRINTER OUT OF PAPER ***"
420 CLS:INPUT"DO YOU WANT 40, 80, OR 132 COLUMNS PER PAGE ";AW
430 IFAW=40THENLPRINTCHR$(31)ELSEIFAW=132THENLPRINTCHR$(29)ELSEL
PRINTCHR$(30)
440 Z$=STRING$(AW+1,32):PRINT:INPUT"HOW MANY LINES PER PAGE  (NO
RMAL = 66) ";AQ:POKE16424,AQ
450 PRINT:INPUT"HOW MANY COPIES REQUIRED ";AN
460 FORLQ=1TOAN:POKE16425,0
470 LPRINTZ$:LPRINT"ESTIMATED FILM COSTS FOR :- ";N$;"      DATE
D:-  ";D$:LPRINTZ$
480 LPRINT"FILM LENGTH          ";L;" FEET."
490 LPRINT"RUNNING TIME         ";RT;" MINS. @ 25 FPS."
500 LPRINT"RAW STOCK            ";S;" ROLLS (400FT)."
510 LPRINT"RAW STOCK COST       ";:LPRINTUSINGC$;P1
520 LPRINT"PROCESSING           ";:LPRINTUSINGC$;P2
530 LPRINT"WORKPRINT            ";:LPRINTUSINGC$;P3
```

```
540 LPRINT"FREIGHT                ";:LPRINTUSINGC$;P4;:LPRINT"
 SUBCOST ";:LPRINTUSINGC$;P5
550 LPRINTZ$:LPRINT"SOUND RECORDING."
560 LPRINT"1/4' TAPE              ";:LPRINTUSINGC$;P6
570 LPRINT"MAGNETIC FILM          ";:LPRINTUSINGC$;P7
580 LPRINT"SOUND TRANSFERS        ";:LPRINTUSINGC$;P8
590 LPRINT"SOUND MIXING           ";:LPRINTUSINGC$;P9;:LPRINT"
 SUBCOST ";:LPRINTUSINGC$;C0
600 LPRINTZ$:LPRINT"FILM LAB COSTS."
610 LPRINT"OPTICAL NEGATIVE       ";:LPRINTUSINGC$;SN
620 LPRINT"NEG MATCHING           ";:LPRINTUSINGC$;NM
630 LPRINT"BLACK SPACER           ";:LPRINTUSINGC$;NB
640 LPRINT"HEAD,TAILS,LEADER      ";:LPRINTUSINGC$;HT
650 LPRINT"SYNCH A/B ROLLS        ";:LPRINTUSINGC$;BA
660 LPRINT"ANSWER PRINT           ";:LPRINTUSINGC$;AP
670 LPRINT"SYNCH,REELS,ETC.       ";:LPRINTUSINGC$;SY;:LPRINT"
 SUBCOST ";:LPRINTUSINGC$;C1
680 LPRINTZ$:LPRINT"RELEASE PRINTS (";RP;" OFF)"
690 LPRINT"RELEASE PRINTS         ";:LPRINTUSINGC$;C2
700 LPRINTZ$:LPRINT"COST PER RELEASE PRINT = ";:LPRINTUSINGC$;C3
710 LPRINTZ$:LPRINT"COST OF FILM           = ";:LPRINTUSINGC$;TC
720 LPRINT"+ CONTINGENCY            ";:LPRINTUSINGC$;CY
730 LPRINT"+ 10% FOR PRICE RISES    ";:LPRINTUSINGC$;PR
740 LPRINTZ$:LPRINT"TOTAL COST OF FILM  =     ";:LPRINTUSINGC$;FC
750 LPRINTZ$:LPRINT"   COST PER MINUTE  =     ";:LPRINTUSINGC$;CM
760 LPRINTCHR$(12):NEXT
770 GOTO1350
1000 CLS:PRINT@0,"ESTIMATED FILM COSTS":PRINT:PRINT"FILM NAME:-
 ";N$;"       DATE:-  ";D$:PRINT
1010 PRINT"FILM LENGTH                ";L;" FEET."
1020 PRINT"RUNNING TIME               ";RT;" MINS. @ 25 FPS."
1030 PRINT"RAW STOCK                  ";S;" ROLLS (400FT)."
1040 PRINT"RAW STOCK COST             ";:P1=F*S:PRINTUSINGC$;P1
1050 PRINT"PROCESSING                 ";:P2=P*S:PRINTUSINGC$;P2
1060 PRINT"WORKPRINT                  ";:P3=W*4.3*S:PRINTUSINGC$;P3
1070 PRINT"FREIGHT                    ";:P4=R:PRINTUSINGC$;P4;:P5=P
1+P2+P3+P4
1080 PRINT"        SUBCOST ";:PRINTUSINGC$;P5:GOSUB1400
1090 CLS:PRINT@0,"SOUND RECORDING."
1100 PRINT"1/4' RECORDING TAPE        ";:P6=SR*RT:PRINTUSINGC$;P6
1110 PRINT"16MM MAGNETIC FILM         ";:P7=SM*RT*.8:PRINTUSINGC$;
P7
1120 PRINT"SOUND TRANSFERS            ";:P8=ST*5:PRINTUSINGC$;P8
1130 PRINT"SOUND MIXING               ";:P9=SX*5:PRINTUSINGC$;P9;
1140 C0=P6+P7+P8+P9:PRINT"       SUBCOST ";:PRINTUSINGC$;C0:GOSUB
1400
1150 CLS:PRINT@0,"FILM LAB COSTS."
1160 PRINT"OPTICAL NEGATIVE           ";:PRINTUSINGC$;SN
1170 PRINT"NEG MATCHING               ";:PRINTUSINGC$;NM
1180 PRINT"BLACK SPACER               ";:PRINTUSINGC$;NB
1190 PRINT"HEADS, TAILS, LEADERS      ";:HT=20:PRINTUSINGC$;HT
1200 PRINT"SYNCHING A & B ROLLS       ";:BA=20:PRINTUSINGC$;BA
1210 PRINT"ANSWER PRINT               ";:AP=(AA+AB+AD+AF):PRINTUSI
NGC$;AP
1220 PRINT"SYNCH,FREIGHT,REELS,ETC.  ";:SY=40:PRINTUSINGC$;SY;
1230 PRINT"        SUBCOST ";:C1=(SN+NM+NB+HT+BA+AP+SY):PRINTUSIN
GC$;C1
1240 GOSUB1400:CLS:PRINT@0,"RELEASE PRINTS (";RP;" OFF)"
1250 PRINT"RELEASE PRINTS             ";:C2=(RA+RB+AF+AD+40)*RP:PR
INTUSINGC$;C2
1260 PRINT"COST PER RELEASE PRINT = ";:C3=C2/RP:PRINTUSINGC$;C3
1270 PRINT:PRINT"COST OF FILM   =         ";:TC=P5+C0+C1+C2:PRINTU
SINGC$;TC
1280 PRINT"+ CONTINGENCY            ";:PRINTUSINGC$;CY
1290 PRINT"+ 10% FOR PRICE RISES  ";:PR=(TC+CY)*.1:PRINTUSINGC$;
PR
1300 PRINT:PRINT"TOTAL COST OF FILM  = ";:FC=PR+CY+TC:PRINTUSING
C$;FC
1310 PRINT:PRINT"COST PER MINUTE  = ";:CM=FC/RT:PRINTUSINGC$;CM
1320 PRINT:INPUT"DO YOU WANT A PRINTOUT OF THIS (Y/N) ";LP$
1330 IFLP$<>"Y"ANDLP$<>"N"THEN1320
1340 IFLP$="Y"THEN400
1350 PRINT:INPUT"DO YOU WANT TO DO ANOTHER RUN (Y/N) ";B$
1360 IFB$<>"Y"ANDB$<>"N"THEN1350
1370 IFB$="Y"THENRUN30ELSEIFB$="N"THENCLS:GOTO2000
1400 PRINT@856,"PRESS <ENTER> TO CONTINUE...";A$
1410 A$=INKEY$:IFA$=""THEN1410ELSERETURN
2000 PRINT"
                    M E N U .
          1.        FILM TIME TO FILM LENGTH.
          2.        FILM LENGTH TO FILM TIME.
          3.        FILM PRODUCTION COSTING.
          4.              Q U I T.
"
2010 INPUT"                         SELECT NUMBER REQUIRED ";A
2020 ONAGOTO2040,2210,20,2500
2030 PRINT:PRINT"TO RETURN TO MENU TYPE   000":RETURN
2040 CLS
2050 INPUT"
FILM TIME IN MINUTES ";FT
2060 IFFT=000THENCLS:GOSUB3000:GOTO2000
2065 FL=FT*37.8:FM=FT*36.0
2070 PRINT"FILM TIME OF ";FT;" MINS = ";FL;" FEET @ 25 FPS."
2080 PRINT"FILM TIME OF ";FT;" MINS = ";FM;" FEET @ 24 FPS."
2090 GOSUB2030:GOTO2050
2210 CLS
2220 INPUT"
FILM LENGTH IN FEET ";LF
2230 IFLF=000THENCLS:GOSUB3000:GOTO2000
2240 NS=LF*1.6:MN=INT(NS/60):SE=NS-MN*60
2250 PRINTLF;" FEET = ";MN;" MINS. ";SE;" SECS @ 25 FPS."
2260 NS=LF*1.66667:MN=INT(NS/60):SE=NS-MN*60
2270 PRINTLF;" FEET = ";MN;" MINS. ";SE;" SECS. @ 24 FPS."
2280 GOSUB2030:GOTO2220
2500 CLS:END
3000 CLS:PRINTSTRING$(64,140);:PRINT"                    COPYRIGHT B
Y SOLAR SOFTWARE 1981.
                MARKETED BY:- SUNSYSTEMS PTY.LTD.,
124 LUTWYCHE ROAD, WINDSOR, BRISBANE, 4030. PHONE:- (07) 577333.
";:PRINTSTRING$(64,176);:RETURN
3010 END
```

```
E000:  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
E010:  40 32 E6 FA CD 2A E6 21 F9 F9 3E 01 32 BF FA CD
E020:  BE FF CD 4A EA CD 3F E3 CD 05 F3 CD 04 E3 21 80
E030:  3C 22 01 E0 22 03 E0 21 AF 3C 22 05 E0 3E 04 32
E040:  0B E0 3A 1D 43 32 00 E0 32 0B E0 F5 CD 37 EF F1
```

**AUTO DIRECTORY - 48K/DISK**

```
E050:  FE 30 CA 78 E0 FE 31 CA 81 E0 FE 32 CA 87 E0 FE
E060:  33 CA 8D E0 3E 30 32 00 E0 32 0B E0 C3 78 E0 7E
E070:  FE 00 C8 12 13 23 18 F7 21 93 E0 CD 19 44 C3 AE
E080:  E0 21 99 E0 C3 7B E0 21 9F E0 C3 7B E0 21 A5 E0
E090:  C3 7B E0 44 49 52 20 30 0D 44 49 52 20 31 0D 44
E0A0:  49 52 20 32 0D 44 49 52 20 33 0D CD 42 E2 11 C0
E0B0:  3F 21 D4 E1 CD 6F E0 3E 00 32 07 E0 CD FC EC CD
E0C0:  2B 00 FE 00 CA BC E0 47 3E 00 32 07 E0 32 08 E0
E0D0:  78 FE 41 CA 5A E2 FE 42 CA 66 E2 FE 43 CA 9C EA
E0E0:  FE 44 CA FB E7 FE 45 CA 67 EB FE 46 CA 72 E2 FE
E0F0:  47 CA EA EB FE 48 CA 9A E2 FE 49 CA CB E8 FE 4A
E100:  CA AC E2 FE 4B CA A7 EB FE 4C CA 25 EC FE 4D CA
E110:  CB E2 FE 4E CA DA E2 FE 4F CA E6 E2 FE 50 CA 23
E120:  E8 FE 51 CA FB E2 FE 52 CA 2D ED FE 53 CA 5A E3
E130:  FE 54 CA 6F E3 FE 55 CA 08 E9 FE 56 CA 83 E3 FE
E140:  57 CA 95 E3 FE 58 CA 2C E9 FE 59 CA 38 E9 FE 5A
E150:  CA A7 E3 FE 31 CA 94 E2 FE 01 CA BA E3 FE 0D CA
E160:  00 EA FE 1F CA 11 E3 FE 5B CA 12 EE FE 0A CA A1
E170:  EE FE 08 CA 48 EE FE 09 CA D7 EE FE 2C CA 48 EE
E180:  FE 2E CA D7 EE 21 94 E1 11 C0 3F CD 6F E0 CD 49
E190:  00 C3 AE E0 41 75 74 6F 6D 61 74 69 63 20 44 69
E1A0:  72 65 63 74 6F 72 79 3A 20 49 6C 6C 65 67 61 6C
E1B0:  20 43 6F 6D 6D 61 6E 64 2E 20 20 20 20 20 20 20
E1C0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E1D0:  20 20 20 00 41 75 74 6F 6D 61 74 69 63 20 44 69
E1E0:  72 65 63 74 6F 72 79 3A 20 43 6F 6D 6D 61 6E 64
E1F0:  3F 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E200:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E210:  20 20 20 00 3A 07 E0 FE 00 28 04 FE 01 28 23 3E
E220:  01 32 07 E0 2A 01 E0 7E 32 09 E0 01 0C 00 09 7E
E230:  32 0A E0 2A 01 E0 36 8F 01 0C 00 09 36 8F CD 2D
E240:  EF C9 3E 00 32 07 E0 2A 01 E0 3A 09 E0 77 01 0C
E250:  00 09 3A 0A E0 77 CD 2D EF C9 CD 04 E3 CD 96 EC
E260:  21 81 E2 C3 05 44 CD 04 E3 CD 96 EC 21 8A E2 C3
E270:  05 44 CD 04 E3 CD 9E EC 21 8F E2 CD 19 44 C3 AE
E280:  E0 44 49 53 41 53 53 45 4D 0D 42 4F 4F 54 0D 46
E290:  52 45 45 0D CD 96 EC C3 0D 44 CD 96 EC CD 04 E3
E2A0:  21 BD E3 11 00 3C CD 6F E0 C3 AE E0 CD 9E EC 3A
E2B0:  E8 37 E6 F0 FE 30 28 03 C3 85 E7 21 C4 E2 CD 19
E2C0:  44 C3 AE E0 4A 4B 4C 0D CD 96 EC CD 04 E3 21 D4
E2D0:  E2 C3 05 44 42 41 53 49 43 0D CD 96 EC CD 04 E3
E2E0:  21 7E E7 C3 05 44 CD 96 EC CD 04 E3 21 F2 E2 C3
E2F0:  05 44 4C 4D 4F 46 46 53 45 54 0D CD 96 EC CD 04
E300:  E3 C3 2D 40 CD C9 01 21 1A E3 11 C0 3F CD 6F E0
E310:  C9 CD 9E EC CD 04 E3 C3 AE E0 41 75 74 6F 6D 61
E320:  74 69 63 20 44 69 72 65 63 74 6F 72 79 3A 20 28
E330:  63 29 20 31 39 38 33 20 62 79 20 43 61 72 6C 20
E340:  43 72 61 6E 73 74 6F 6E 65 2E 20 20 20 20 20 20
E350:  20 20 20 20 20 20 20 20 20 00 CD 96 EC CD 04 E3
E360:  21 66 E3 C3 05 44 53 55 50 45 52 5A 41 50 0D CD
E370:  9E EC CD 04 E3 21 7E E3 CD 19 44 C3 AE E0 54 49
E380:  4D 45 0D CD 04 E3 21 8C E3 C3 05 44 44 49 52 43
E390:  48 45 43 4B 0D CD 96 EC CD 04 E3 21 A1 E3 C3 05
E3A0:  44 53 43 52 49 50 0D CD 96 EC CD 04 E3 21 B3 E3
E3B0:  C3 05 44 45 44 54 41 53 4D 0D C3 FB E2 41 20 2D
E3C0:  20 44 69 73 61 73 73 65 6D 62 6C 65 72 20 20 20
E3D0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E3E0:  20 20 20 20 20 20 50 20 2D 20 44 69 72 2F 70 72
E3F0:  69 6E 74 65 72 20 20 20 20 20 20 20 20 20 42 20 2D
E400:  20 42 6F 6F 74 20 20 20 20 20 20 20 20 20 20 20
E410:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E420:  20 20 20 20 20 20 51 20 2D 20 51 75 69 74 2C 20
E430:  65 78 69 74 20 74 6F 20 44 6F 73 20 20 43 20 2D
E440:  20 43 6F 70 79 20 20 20 20 20 20 20 20 20 20 20
E450:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E460:  20 20 20 20 20 20 52 20 2D 20 52 65 6E 61 6D 65
E470:  20 20 20 20 20 20 20 20 20 20 20 20 20 44 20 2D
E480:  20 44 69 72 20 20 20 20 20 20 20 20 20 20 20 20
E490:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E4A0:  20 20 20 20 20 20 53 20 2D 20 53 75 70 65 72 7A
E4B0:  61 70 20 20 20 20 20 20 20 20 20 20 20 45 20 2D
E4C0:  20 4C 6F 61 64 20 20 20 20 20 20 20 20 20 20 20
E4D0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E4E0:  20 20 20 20 20 20 54 20 2D 20 44 69 73 70 6C 61
E4F0:  79 20 74 69 6D 65 20 20 20 20 20 20 20 46 20 2D
E500:  20 44 69 73 70 6C 61 79 20 66 72 65 65 20 73 70
E510:  61 63 65 20 6F 6E 20 64 72 69 76 65 73 20 20 20
E520:  20 20 20 20 20 20 55 20 2D 20 43 68 61 69 6E 62
E530:  6C 64 2F 62 61 73 20 20 20 20 20 20 20 47 20 2D
E540:  20 45 78 65 63 75 74 65 20 44 4F 20 66 69 6C 65
E550:  20 2F 4A 43 4C 20 20 20 20 20 20 20 20 20 20 20
E560:  20 20 20 20 20 20 56 20 2D 20 44 69 72 63 68 65
E570:  63 6B 20 20 20 20 20 20 20 20 20 20 20 48 20 2D
E580:  20 48 65 6C 70 20 28 54 68 69 73 20 70 61 67 65
E590:  29 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E5A0:  20 20 20 20 20 20 57 20 2D 20 53 63 72 69 70 73
E5B0:  69 74 20 20 20 20 20 20 20 20 20 20 20 49 20 2D
E5C0:  20 46 6F 72 6D 61 74 20 20 20 20 20 20 20 20 20
E5D0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E5E0:  20 20 20 20 20 20 5B 20 2D 20 45 6C 65 63 74 72
E5F0:  69 63 20 50 65 6E 63 69 6C 20 20 20 20 4A 20 2D
E600:  20 4A 4B 4C 20 73 63 72 65 65 6E 20 64 75 6D 70
E610:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E620:  20 20 20 20 20 20 59 20 2D 20 42 61 73 69 63 2C
E630:  20 42 6D 6F 6E 34 38 20 20 20 20 20 20 4B 20 2D
E640:  20 4B 69 6C 6C 20 66 69 6C 65 20 20 20 20 20 20
E650:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E660:  20 20 20 20 20 20 5A 20 2D 20 45 64 69 74 6F 72
E670:  20 41 73 73 65 6D 62 6C 65 72 20 20 20 4C 20 2D
E680:  20 4C 69 73 74 20 66 69 6C 65 20 20 20 20 20 20
E690:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E6A0:  20 20 20 20 20 20 3C 42 72 6B 3E 20 2D 20 51 75
E6B0:  69 74 2C 20 44 4F 53 20 20 20 20 20 20 4D 20 2D
E6C0:  20 44 69 73 6B 20 42 61 73 69 63 20 20 20 20 20
E6D0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E6E0:  20 20 20 20 20 20 3C 45 6E 74 3E 20 2D 20 52 75
E6F0:  6E 20 66 69 6C 65 20 61 74 20 43 50 20 4E 20 2D
E700:  20 42 41 53 49 43 32 20 20 20 20 20 20 20 20 20
E710:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E720:  20 20 20 20 20 20 5D 20 5E 20 2D 20 43 75 72 73
E730:  6F 72 20 6C 65 66 74 2F 72 69 67 68 74 4F 20 2D
E740:  20 4C 6D 6F 66 66 73 65 74 20 20 20 20 20 20 20
E750:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E760:  20 20 20 20 20 20 5B 20 5C 20 2D 20 43 75 72 73
E770:  6F 72 20 75 70 2F 64 6F 77 6E 20 20 20 00 42 41
E780:  53 49 43 32 0D 21 94 E7 11 C0 3F CD 6F E0 CD 49
E790:  00 C3 AE E0 50 72 69 6E 74 65 72 20 6F 6F 74 20
E7A0:  72 65 61 64 79 2E 20 20 20 20 20 20 20 20 20 20
E7B0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E7C0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
```

```
E7D0:  20 20 20 00 21 BB E8 11 C0 3F CD 6F E0 CD 2B 00
E7E0:  FE 00 28 F9 FE 31 28 0F FE 32 28 0B FE 33 28 07
E7F0:  FE 30 28 03 C3 DD E7 32 00 E0 C9 CD 9E EC 3E 04
E800:  32 0B E0 CD D4 E7 3A 00 E0 32 0B E0 FE 30 CA 78
E810:  E0 FE 31 CA 81 E0 FE 32 CA 87 E0 FE 33 CA 8D E0
E820:  C3 AE E0 CD 9E EC 3A E8 37 E6 F0 FE 30 28 03 C3
E830:  85 E7 CD D4 E7 3A 00 E0 FE 30 28 0F FE 31 28 19
E840:  FE 32 28 1B FE 33 28 1D C3 AB E0 21 6B E8 CD 19
E850:  44 3E 04 32 08 E0 C3 06 E8 21 73 E8 C3 4E E8 21
E860:  7B E8 C3 4E E8 21 83 E8 C3 4E E8 44 49 52 20 30
E870:  2C 50 0D 44 49 52 20 31 2C 50 0D 44 49 52 20 32
E880:  2C 50 0D 44 49 52 20 33 2C 50 0D 44 72 69 76 65
E890:  20 4E 75 6D 62 65 72 3F 20 28 30 2D 33 29 3A 20
E8A0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E8B0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E8C0:  20 20 20 20 20 20 20 20 20 20 00 CD 96 EC CD A6
E8D0:  EC CD 04 E3 CD D4 E7 3A 00 E0 FE 30 28 0F FE 31
E8E0:  28 14 FE 32 28 16 FE 33 28 18 C3 AE E0 21 F5 EA
E8F0:  CD 19 44 C3 AE E0 21 FE EA C3 F0 E8 21 07 EB C3
E900:  F0 E8 21 10 EB C3 F0 E8 CD 96 EC CD 04 E3 21 14
E910:  E9 C3 05 44 42 41 53 49 43 20 52 55 4E 22 43 48
E920:  41 49 4E 42 4C 44 2F 42 41 53 22 0D CD 96 EC CD
E930:  04 E3 21 44 E9 C3 05 44 CD 96 EC CD 04 E3 21 4F
E940:  E9 C3 05 44 50 45 4E 43 49 4C 2F 43 4D 44 0D 42
E950:  41 53 49 43 20 43 4D 44 22 42 4D 4F 4E 2F 43 4D
E960:  44 22 0D CD 42 E2 2A 01 E0 11 10 E0 01 0C 00 ED
E970:  B0 C9 43 4F 50 59 20 46 49 4C 45 53 50 45 43 2F
E980:  45 58 54 3A 58 20 3A 59 0D 42 41 53 49 43 20 52
E990:  55 4E 22 46 49 4C 45 53 50 45 43 2F 45 58 54 22
E9A0:  0D 46 49 4C 45 53 50 45 43 2F 45 58 54 0D CD 04
E9B0:  E3 21 C0 E9 11 C0 3F CD 6F E0 CD 49 00 C3 AE E0
E9C0:  49 6C 6C 65 67 61 6C 20 66 69 6C 65 73 70 65 63
E9D0:  2E 2E 2E 20 20 20 20 20 20 20 20 20 20 20 20 20
E9E0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
E9F0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 00
EA00:  CD 96 EC CD 42 E2 CD 63 E9 CD 04 E3 3E 2F 01 0C
EA10:  00 21 10 E0 ED B1 28 03 F2 AE E9 22 0C E0 7E FE
EA20:  42 28 03 C3 35 EA 23 7E FE 41 28 03 C3 35 EA 23
EA30:  7E FE 53 28 1D 2A 0C E0 7E FE 43 28 03 C3 AE E9
EA40:  23 7E FE 4D 28 03 C3 AE E9 23 7E FE 44 28 1A C3
EA50:  AE E9 11 89 E9 01 0A 00 EB 09 EB 21 10 E0 01 0C
EA60:  00 ED B0 21 89 E9 C3 05 44 11 A1 E9 21 10 E0 01
EA70:  0C 00 ED B0 21 A1 E9 C3 05 44 20 20 20 20 20 20
EA80:  43 6F 70 79 69 6E 67 20 66 69 6C 65 21 20 20 20
EA90:  20 20 20 20 20 20 20 20 20 20 20 00 CD 63 E9 3E
EAA0:  04 32 08 E0 CD 9E EC CD D4 E7 21 7A EA 11 D4 3F
EAB0:  CD 6F E0 11 72 E9 01 05 00 EB 09 EB 21 10 E0 01
EAC0:  0C 00 ED B0 21 72 E9 01 05 00 09 01 0D 00 3E 20
EAD0:  ED B1 2B 3E 3A 77 23 3A 0B E0 77 23 3E 20 77 23
EAE0:  3E 3A 77 23 3A 00 E0 77 23 3E 0D 77 21 72 E9 CD
EAF0:  19 44 C3 AB E0 46 4F 52 4D 41 54 2C 30 0D 46 4F
EB00:  52 4D 41 54 2C 31 0D 46 4F 52 4D 41 54 2C 32 0D
EB10:  46 4F 52 4D 41 54 2C 33 0D 4C 4F 41 44 20 46 49
EB20:  4C 45 53 50 45 43 2F 45 58 54 3A 58 0D 4B 49 4C
EB30:  4C 20 46 49 4C 45 53 50 45 43 2F 45 58 54 3A 58
EB40:  0D 44 4F 20 46 49 4C 45 53 50 45 43 2F 45 58 54
EB50:  3A 58 0D 4C 49 53 54 20 46 49 4C 45 53 50 45 43
EB60:  2F 45 58 54 3A 58 0D CD 9E EC 3E 04 32 08 E0 CD
EB70:  63 E9 11 19 EB 01 05 00 EB 09 EB 21 10 E0 01 0C
EB80:  00 ED B0 21 19 EB 01 05 00 09 01 0D 00 3E 20 ED
EB90:  B1 2B 3E 3A 77 23 3A 0B E0 77 23 3E 0D 77 21 19
EBA0:  EB CD 19 44 C3 AB E0 CD 96 EC 3E 04 32 0B E0 CD
EBB0:  A6 EC CD 63 E9 11 2D EB 01 05 00 EB 09 EB 21 10
EBC0:  E0 01 0C 00 ED B0 21 2D EB 01 05 00 09 01 0D 00
EBD0:  3E 20 ED B1 2B 3E 3A 77 23 3A 0B E0 77 23 3E 0D
EBE0:  77 21 2D EB CD 19 44 C3 AB E0 CD 9E EC CD 63 E9
EBF0:  11 41 EB 01 03 00 EB 09 EB 21 10 E0 01 0C 00 ED
EC00:  B0 21 41 EB 01 03 00 09 01 0D 00 3E 20 ED B1 2B
EC10:  3E 3A 77 23 3A 0B E0 77 23 3E 0D 77 21 41 EB CD
EC20:  19 44 C3 AE E0 CD 9E EC CD 63 E9 11 53 EB 01 05
EC30:  00 EB 09 EB 21 10 E0 01 0C 00 ED B0 21 53 EB 01
EC40:  05 00 09 01 0D 00 3E 20 ED B1 2B 3E 3A 77 23 3A
EC50:  0B E0 77 23 3E 0D 77 21 53 EB CD 19 44 C3 AE E0
EC60:  DD 4E 00 79 FE 00 C8 DD 46 01 3E 01 D3 FF 10 FE
EC70:  DD 46 01 3E 02 D3 FF 10 FE 0D C2 67 EC DD 23 DD
EC80:  23 01 FF FF 21 30 00 09 DA 87 EC C3 60 EC 1E 1E
EC90:  32 46 00 14 14 00 DD 21 8E EC CD 60 EC C9 DD 21
ECA0:  93 EC CD 60 EC C9 21 BB EC 11 C0 3F CD 6F E0 CD
ECB0:  49 00 FE 59 C8 CD 9E EC C3 AB E0 41 72 65 20 79
ECC0:  6F 75 20 73 75 72 65 3F 3F 3F 20 20 20 20 20 20
ECD0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
ECE0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
ECF0:  20 20 20 20 20 20 20 20 20 20 20 00 3A 08 E0 FE
ED00:  04 28 01 C9 C3 14 E2 52 45 4E 41 4D 45 20 46 49
ED10:  4C 45 53 50 45 43 2F 45 58 54 3A 58 20 54 4F 20
ED20:  46 49 4C 45 53 50 45 43 2F 45 58 54 0D CD 96 EC
ED30:  3E 04 32 08 E0 CD 42 E2 CD 63 E9 CD 88 ED 21 07
ED40:  ED 01 07 00 09 EB 21 10 E0 01 0C 00 ED B0 21 07
ED50:  ED 01 07 00 09 01 0D 00 3E 20 ED B1 2B 3E 3A 77
ED60:  23 3A 0B E0 77 23 3E 20 77 23 3E 54 77 23 3E 4F
ED70:  77 23 3E 20 77 23 EB 21 1C E0 01 0D 00 ED B0 21
ED80:  07 ED CD 19 44 C3 AB E0 11 C0 3F 21 D0 ED CD 6F
ED90:  E0 21 CB 3F CD 49 00 77 23 3E 0B 32 0F E0 C3 BE
EDA0:  ED 3A 0F E0 3D FE 00 CA B0 ED 32 0F E0 C3 9E ED
EDB0:  36 0D 21 CB 3F 11 1C E0 01 0D 00 ED B0 C9 CD 49
EDC0:  00 FE 0D CA B0 ED FE 08 CA 04 EE 77 23 C3 A1 ED
EDD0:  4E 65 77 20 6E 61 6D 65 3F 20 8F 20 20 20 20 20
EDE0:  20 20 20 20 20 20 20 20 8F 20 20 20 20 20 20 20
EDF0:  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
EE00:  20 20 20 00 2B 3E 20 77 3A 0F E0 3C 32 0F E0 C3
EE10:  9E ED 3E 04 32 08 E0 2A 01 E0 01 C0 FF 09 CD FC
EE20:  EE 3A 0E E0 FE 00 CA 45 EE E5 CD 42 E2 E1 22 01
EE30:  E0 2A 03 E0 01 C0 FF 09 22 03 E0 2A 05 E0 09 22
EE40:  05 E0 C3 AE E0 C3 AB E0 3E 04 32 08 E0 2A 01 E0
EE50:  01 F1 FF 09 CD 6D EE 3A 0E E0 FE 00 CA 6A EE E5
EE60:  CD 42 E2 E1 22 01 E0 C3 AE E0 C3 AB E0 ED 5B 03
EE70:  E0 DF DA 7B EE D2 81 EE CA 81 EE 3E 00 32 0E E0
EE80:  C9 3E 01 32 0E E0 C9 ED 5B 05 E0 DF DA 9B EE D2
EE90:  95 EE CA 9B EE 3E 00 32 0E E0 C9 3E 01 32 0E E0
EEA0:  C9 3E 04 32 08 E0 2A 01 E0 01 40 00 09 CD FC EE
EEB0:  3A 0E E0 FE 00 CA D4 EE E5 CD 42 E2 E1 22 01 E0
EEC0:  2A 03 E0 01 40 00 09 22 03 E0 2A 05 E0 09 22 05
EED0:  E0 C3 AE E0 C3 AB E0 3E 04 32 08 E0 2A 01 E0 01
EEE0:  0F 00 09 CD 87 EE 3A 0E E0 FE 00 CA F9 EE E5 CD
EEF0:  42 E2 E1 22 01 E0 C3 AE E0 C3 AB E0 11 80 3C DF
EF00:  DA 09 EF D2 0F EF CA 0F EF 3E 00 32 0E E0 C9 3E
EF10:  01 32 0E E0 11 AD 3F DF DA 27 EF D2 21 EF CA 27
EF20:  EF 3E 00 32 0E E0 C9 3E 01 32 0E E0 C9 01 D0 07
EF30:  0B 78 B1 C2 30 EF C9 21 3E EF CD 19 44 C9 48 49
EF40:  4D 45 4D 2C 45 30 30 30 48 0D
```

# NEXT MONTH'S ISSUE

*Next month's issue will contain at least the following programs plus the usual features and articles. An (80) after a program title indicates that the program will be for TRS-80 Model 1/3 or System 80/Video Genie. A (CC) indicates that the program will be for the TRS-80 Colour Computer and (VZ) that the program is for the VZ-200.*

**DISK DIRECTORY RECORDER (MODEL 3)**

*About the time you start on your second box of diskettes, you run into the problem of keeping track of all those files. It seems a shame to use pen and paper to do this when you have a perfectly good computer there. Disk Directory recorder stores a sorted catalogue of all files showing the name of each file, its extensions and the name of the disk on which it may be found. It is thus a simple matter to update your catalogue as you add and delete new files.*

**SIRIUS ADVENTURE — 32K DISK**

*You saw how this was converted for the Peach and CoCo last issue. Now we have the original. I hope you haven't already coverted it yourself. Tape mods are included.*

**SHAREMARKET — LII/16K**

*Based on the popular "Stockmarket" board game, this lets you see if you have the makings of a business mogul. Buy and sell shares in your quest to outgain the other players.*

**WORDS AND MEANINGS — LII/16K**

*This program is designed to assist students with difficulties in basic English, but it could find uses in areas where a knowledge of definitions is required.*

**ARRAY UTILITY — LII/16K ml**

*This program will be of interest to TRS-80 users who have only a cassette system for storing numerical or string data. It enables the transfer of arrays between RAM and tape in a fashion independent of their original location in memory and at a rate that is limited primarily by the baud rate of the cassette system. The program also provides for the erasure or renaming of string arrays, two procedures that can be used to optimize the use of available memory.*

**JUNIOR MATHS — VZ**

*This maths drill program was written to assist the author's child learn elementary arithmetic. The colour graphics display adds a slightly macabre touch to the learning process.*

**BATTLESHIPS — VZ**

*The old board game brought up to date. Still for 2 players with the computer acting as the board and scorekeeper. Lots of fun for kids of all ages.*

## APPLICATION FOR PUBLICATION OF A PROGRAM IN MICRO-80

Date .....

To **MICRO-80**
SOFTWARE DEPT.,
P.O. BOX 213,
GOODWOOD, S.A. 5034

Please consider the enclosed program for publication in MICRO-80.

Name .....

Adress .....

..... Postcode .....

***** CHECK LIST *****

Please ensure that the cassette or disk is clearly marked with your name and address, program name(s), Memory size, Level I, II, System 1 or 2, Edtasm, System, etc. The use of REM statements with your name and address is suggested, in case the program becomes separated from the accompanying literature.

Ensure that you supply adequate instructions, notes on what the program does and how it does it, etc.

For system tapes, the start, end, and entry points, etc.

The changes or improvements that you think may improve it.

Please package securely — padabags are suggested — and enclose stamps or postage if you want your cassette or disk returned.

# CASSETTE/DISK EDITION INDEX

*The cassette edition of MICRO-80 contains all the applicable software listed each month, on cassette. For machine language programs copies of both the source and object file are provided. All programs are recorded twice. Level 1 programs can only be loaded into a Level 2 machine if the 'Level 1 in Level 2' program from the MICRO-80 Software Library — Vol. 1 is loaded first.*

**Note:** *System 80/Video Genie computers have had different tape-counters fitted at different times. The approximate start positions shown are correct for the very early System 80 without the volume control or level meter. They are probably incorrect for later machines. The rates for a cassette subscription are printed on the inside front cover of each issue of the magazine.*

*The disk edition contains all applicable programs which can be executed from disk. Level 1 disk programs are saved in NEWDOS format. Users require the Level 1/CMD utility supplied with NEWDOS+ or NEWDOS 80 version 1.0 to run them.*

| | | | | Approx. Start Position | | |
|---|---|---|---|---|---|---|
| **Side 1** | **Type** | **I.D.** | **Disk Filespec** | **CTR-41** | **CTR-80** | **System 80** |
| Nightmare Park | L2/16K | N | NIGHTMAR/BAS | 100 | 6 | 4 |
| Nightmare Park | L2/16K | N | NIGHTMAR/BAS | 50 | 28 | 19 |
| Amateur Radio Log | L2/16K | R | RADIO/BAS | 90 | 51 | 34 |
| Amateur Radio Log | L2/16K | R | RADIO/BAS | 145 | 82 | 55 |
| Film Costing | L2/16K | F | FILMCOST/BAS | 200 | 113 | 76 |
| Film Costing | L2/16K | F | FILMCOST/BAS | 260 | 147 | 99 |
| Automatic Directory | 32K/DISK | ADIR | ADIR/CMD | 320 | 180 | 121 |
| Automatic Directory | 32K/DISK | ADIR | ADIR/CMD | 365 | 206 | 138 |
| **Side 2** | | | | | | |
| Cricket | COCO | CRICKET | — | 10 | 6 | 4 |
| Cricket | COCO | CRICKET | — | 40 | 23 | 15 |
| Automatic Directory | EDTASM | ADIRSC | ADIR/EDT | 70 | 39 | 26 |
| Automatic Directory | EDTASM | ADIRSC | ADIR/EDT | 280 | 158 | 106 |

**TO:**
**MICRO-80, P.O. BOX 213, GOODWOOD,**
**SOUTH AUSTRALIA. 5034.**

*Please RUSH to me the items shown below:*

$ enclosed Date .....

..... 12 month subscription to MICRO-80
..... 12 month subs. to MICRO-80, plus the cassette edition
..... 12 month subs. to MICRO-80, plus the disc edition
..... The latest issue of MICRO-80 (see page 1 for prices)

FOR TRS-80 ☐ 1 ☐ 2/16 ☐ 3 — KRAM ☐ TAPE ☐ DISK
SYSTEM 80 MARK ☐ 1 ☐ 11 — KRAM

| DESCRIPTION | QTY | PRICE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | P/H | |
| | Total | |

*TOTAL ENCLOSED WITH ORDER*
☐ Cheque ☐ Bankcard ☐ Money Order

Bankcard Account Number

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |

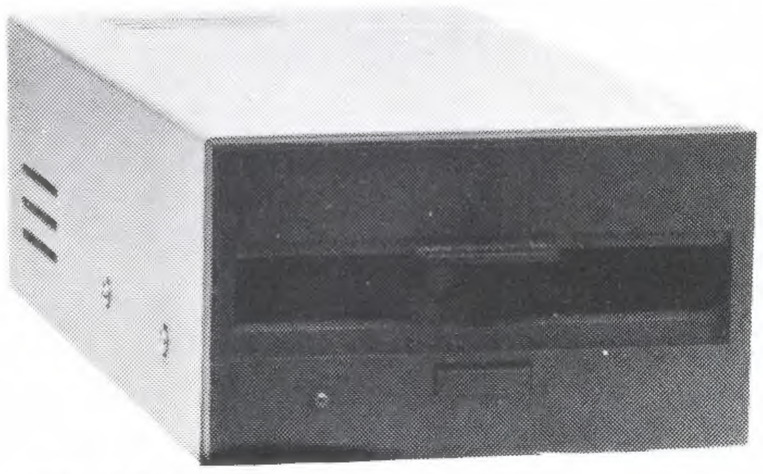
Signature ..... Exp. End .....

NAME .....

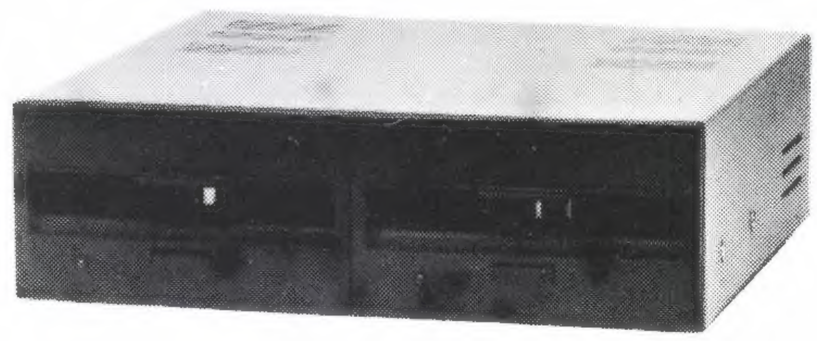
ADDRESS ..... Postcode .....

*Post/Handling charge on all Software ordered — $4.00.

# SAVE A PACKET ON MICRO-80's DISK DRIVE PACKAGES FOR TRS-80 MODEL 1 AND SYSTEM 80 MICROCOMPUTERS



**SINGLE DRIVE PACKAGE *from ...* $499**



**DUAL DRIVE PACKAGE *from ...* $874**

**Bigger volume means lower cost price, which we are passing on to you. Avoid the annoying bundle of cables, wires and separate boxes. MICRO-80 is now offering our well-proven MPI disk drives in attractive, self-contained single or dual-drive cabinets complete with internal power supply. Our drive Ø and dual-drive packages also include the appropriate version of DOSPLUS and dual-drive cable.**

***The best news of all is the specially reduced package prices ...***
**SAVE $23 — $107 over our already low prices!**

*Choose the appropriate system from the table below:*

| DRIVE TYPE | No. of Tracks | No. of Heads | Capacity | Dosplus Version | Price | * Saving |
|---|---|---|---|---|---|---|
| **DRIVE Ø** | | | | | | |
| 1 x MPI B51 | 40 | 1 | 100K | 3.5 | $499 | $137.95 |
| 1 x MPI B52 | 40 | 2 | 200K | 3.5 | $639 | $97.95 |
| 1 x MPI B92 | 80 | 2 | 400K | 3.5 | $799 | $107.95 |
| **DRIVE 1** | | | | | | |
| 1 x MPI B51 | 40 | 1 | 100K | — | $415 | $33.00 |
| 1 x MPI B52 | 40 | 2 | 200K | — | $525 | $23.00 |
| 1 x MPI B92 | 80 | 2 | 400K | — | $695 | $23.00 |

*Represents the saving compared with buying all the items included in the package separately

•Drive Ø package includes one bare disk drive, self-contained single-drive cabinet/power supply as illustrated, two drive cable and the version of DOSPLUS indicated.

•Drive 1 package includes one bare disk drive and self-contained single-drive cabinet/power supply as illustrated.

***If it's a dual-drive system you need, then take advantage of our dual-drive package and***
**SAVE a further $40 on the price of two single-drive packages ...**

| DRIVE TYPE | No. of Tracks | No. of Heads | Capacity | Dosplus Version | Price |
|---|---|---|---|---|---|
| 2 x MPI B51 | 40 ea | 1 ea | 2 x 100K | 3.5 | $874 |
| 2 x MPI B52 | 40 ea | 2 ea | 2 x 200K | 3.5 | $1125 |
| 2 x MPI B92 | 80 ea | 2 ea | 2 x 400K | 3.5 | $1454 |

Dual-drive package includes two bare disk drives, self-contained dual-drive cabinet/power supply as illustrated, two drive cables and the version of Dosplus indicated.

All disk drive components are still available separately:

**BARE DRIVES** — MPI drives offer the fastest track-to-track access time (5 milliseconds) available. All drives are capable of operating in double density for 80% greater storage capacity.

| | Price | Freight | | | |
|---|---|---|---|---|---|
| MPI B51 40 track, single-head, 100K | $349 | $5.00 | Self-contained, single drive cabinet/power supply | $99 | $5.00 |
| MPI B52 40 track, dual-head, 200K | $449 | $5.00 | Self-contained, dual-drive cabinet/power supply | $135 | $5.00 |
| MPI B92 80 track, dual-head, 400K | $619 | $5.00 | Two drive cable | $39 | $2.00 |
| Separate, dual-drive power supply | $85 | | Four drive cable | $49 | $2.00 |

**Prices are FOB Adelaide. Add $5.00 freight for single drive package, $10.00 for dual-drive package. Prices are in Australian dollars. Freight is road freight anywhere in Australia.**

**All items carry a 90-day parts and labour warranty. Repairs to be carried out in our Adelaide workshops.**

# MICRO-80

LEVEL 2 ROM

## ASSEMBLY LANGUAGE TOOLKIT

by Edwin Paay

## FOR TRS-80 MODEL 1, MODEL 3 AND SYSTEM 80/VIDEO GENIE

This is a new package consisting of two invaluable components:

- **A ROM REFERENCE** Manual which catalogues, describes and cross-references the useful and usable ROM routines which you can incorporate into your own machine language or BASIC programs.
- **DBUG**, a machine language disassembling debugging program to speed up the development of your own machine language programs. DBUG is distributed on a cassette and may used from disk or cassette.

Part 1 of the ROM REFERENCE manual gives detailed explanations of the processes used for arithmetical calculations, logical operations, data movements etc. It also describes the various formats used for BASIC, System and Editor/Assembly tapes. There is a special section devoted to those additional routines in the TRS-80 Model 3 ROM. This is the first time this information has been made available, anywhere. Differences between the System 80/Video Genie are also described. Part 1 is organised into subject specific tables so that you can quickly locate all the routines to carry out a given function and then choose the one which meets your requirements.

Part 2 gives detailed information about each of the routines in the order in which they appear in the ROM. It describes their functions, explains how to use them in your own machine language programs and notes the effect of each on the various Z80 registers.

Part 2 also details the contents of system RAM and shows you how to intercept BASIC routines. With this knowledge, you can add your own commands to BASIC, for instance, or position BASIC programs in high memory — the only restriction is your own imagination!

The Appendices contain sample programmes which show you how you can use the ROM routines to speed up your machine language programs and reduce the amount of code you need to write.

DBUG: Eddy Paay was not satisfied with any of the commercially available debugging programs, so he developed his own. DBUG: allows you to single-step through your program; has a disassembler which disassembles the next instruction before executing it or allows you to bypass execution and pass on through the program, disassembling as you go; displays/edits memory in Hex or ASCII; allows Register editing; has the ability to read and write System tapes and all this on the bottom 3 lines of your screen, thus freeing the rest of the screen for program displays. Four versions of DBUG are included in the package to cope with different memory sizes.

**The best news of all is the price. The complete Level 2 ROM ASSEMBLY LANGUAGE TOOLKIT is only:**

**— Aus. $29.95 + $2.00 p&p**
**— UK £18.00 + £1.00 p&p**

SPECIAL OFFER TO OWNERS OF THE LEVEL II ROM REFERENCE MANUAL ...
UPGRADE TO THIS ASSEMBLY LANGUAGE TOOKIT FOR ONLY $19.95!
Send back your original Level II ROM Reference Manual plus a cheque, money order or Bankcard authorisation for $19.95 plus $2.00 p&p and we will send you the new ASSEMBLY LANGUAGE TOOLKIT

MICRO-80